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ABSTRACT

This volume contains 20 case study profiles of educational RDD&E projects and, as such, constitutes the data base for the Oregon Studies. This part (Part 2) of Volume IV contains profiles of seven development projects along with information that describes the development of the profiles, explains how to read the profiles, and includes a glossary of common profile terms. Each profile contains three sets of data: (1) descriptors of general project characteristics, (2) descriptors of personnel working within the projects, and (3) descriptors of the work requirements within a project. The central data reported in a profile deal with project work requirements. In this regard, each profile describes the output of work effort; the standards established for those outputs; the operations required to produce outputs to specified standards; and the knowledges, skills, and sensitivities needed to carry out those operations. Related documents are EA 004 582-586 and EA 004 588-589. (Chart on page 666 may reproduce poorly.) (Author/JH)

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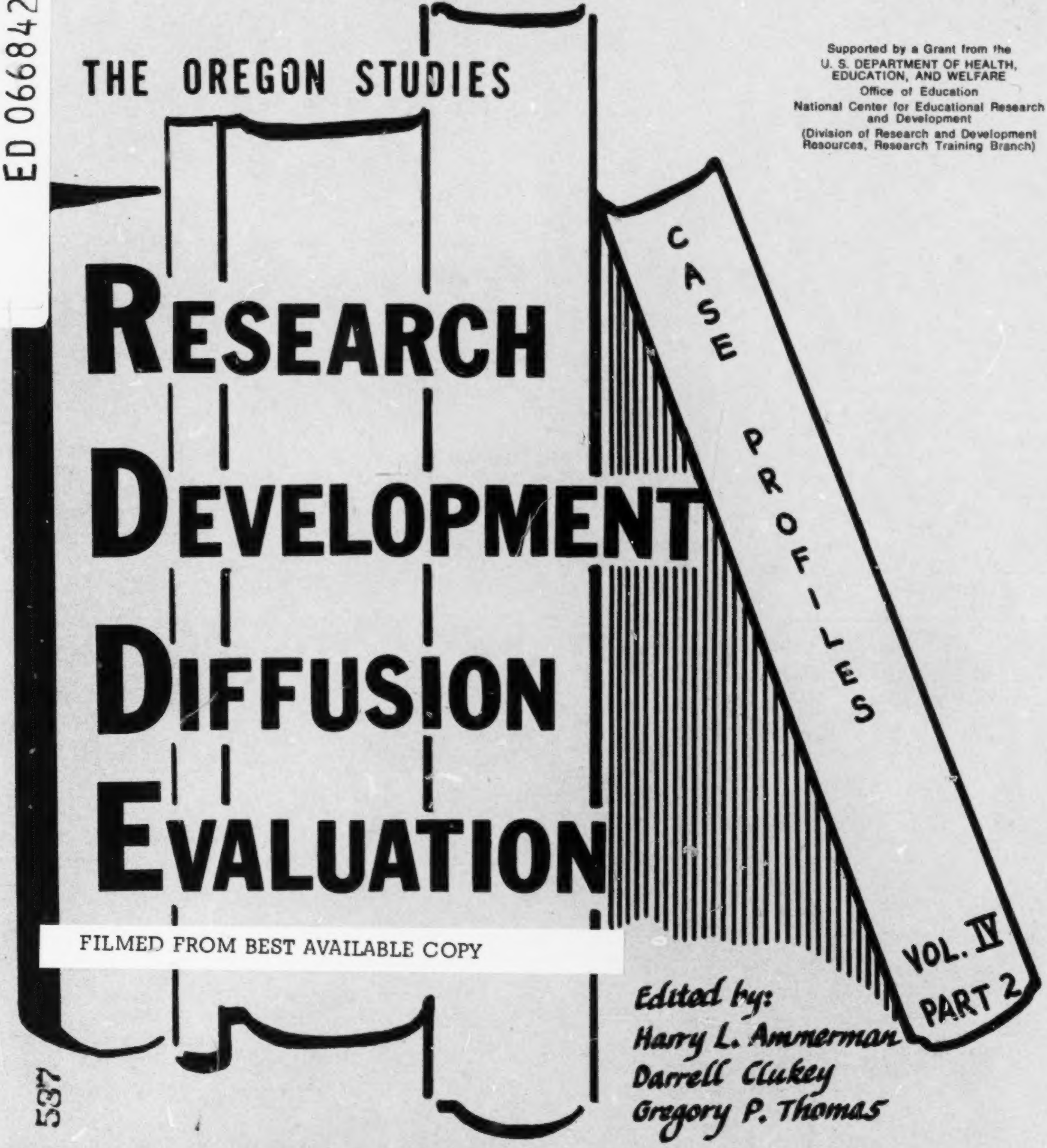

THE OREGON STUDIES

RESEARCH DEVELOPMENT DIFFUSION EVALUATION

CASE PROFILES

VOL. IV PART 2

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Edited by:
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EA 004 537

TEACHING RESEARCH
a division of the Oregon State System of Higher Education

AN OVERVIEW OF THE OREGON STUDIES IN EDUCATIONAL RDD&E

In the spring of 1970 the Training Branch of the U.S. Office of Education, National Center for Educational Research and Development, announced a plan to effect change in the preparation of educational RDD&E personnel. Two factors led to the announcement. The underlying factor was the rather dramatic emergence in the past decade of development, diffusion, and evaluation activities as vehicles for educational improvement, and the attending need for qualified personnel to carry them out. The precipitating factor, however, was evidence that in spite of an investment of approximately 30 million dollars by the Federal Government to help training programs become more responsive to the personnel needs created by these new activities, essentially the same number and kind of personnel were being prepared in 1970 as in 1965.

The plan for change reflected a strategy that can best be described as "beginning at the beginning." It incorporated three interrelated lines of activity: the creation of a conceptual and empirical base on which to build functional training programs; the design of more effective and efficient approaches to training; and the development of instructional materials that reflect desired changes in both content and procedure. The propositions on which the plan rested were straightforward: (a) little was known about educational development, diffusion and evaluation activities, or how they related to educational research; (b) even less was known about the training of personnel to carry out such activities; and (c) until both of these conditions were remedied the likelihood of designing effective and efficient programs to prepare personnel to carry them out was slight. The plan as a whole was coordinated so that the various activities within it would be developed with sensitivity to each other, and so that they would come together in completed fashion at approximately the same point in time. (For additional details on the plan for change see Chapter I in Volume I of the series reporting the Oregon Studies.)

The Oregon Studies, carried out by the Teaching Research Division of the Oregon State System of Higher Education, were to contribute in a beginning way to the conceptual and empirical base called for in the plan. As such they were to produce five products: a collection of detailed "case study" descriptions of projects that illustrated exemplary RDD&E activities within various educational contexts; a reliable, economically feasible methodology by which to collect the data needed to prepare the case studies; a conceptual system or framework for viewing the domain of educational RDD&E that could be used as a guide to the classes of data to be attended to in the case studies; cross-project analyses that highlighted the similarities and differences observed in the projects described, and that tested in rudimentary fashion the adequacy of the conceptual framework underlying those observations; and a compendium of the existing literature that pertained to either the nature of or the interactions between activities labeled educational research, development, diffusion and evaluation. These products are reported in five volumes:

Volume I.	Summary Report (with Technical Appendices)
Volume II.	The Literature of Educational RDD&E Part One (Research, Evaluation, and Development) Part Two (Diffusion & Combinations of RDD&E)
Volume III.	Conceptual Frameworks for Viewing Educational RDD&E
Volume IV.	Profiles of Exemplary Projects in Educational RDD&E Part One (Research and Evaluation) Part Two (Development) Part Three (Diffusion)
Volume V.	A Methodology for the Study of Educational RDD&E

Each volume in the series reporting the Studies has been designed to stand alone, but because each volume reports a different product, and each product can be understood fully only in relation to the other products, two "reader's guides" to the series have been prepared. The first involves brief summaries or abstracts of the contents of each of the five volumes in the series. These appear on the inside of the back cover of the volume, and are intended to serve as a guide or overview to the series as a whole. A more detailed guide is provided by Volume I. In addition to serving as a general summary of the Studies, it contains descriptions of the developmental histories of the products reported in the various volumes, the relationships that exist between them, and the manner in which they have interacted over time. Accordingly, for the reader who wishes to determine quickly what each of the five volumes in the series contains, turn to the inside of the back cover of the volume; for the reader who wishes to understand how the volumes relate to one another, follow that by reading Volume I.

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Final Report

Project No. 0-0701
Grant No. OEG-0-70-4977

A project entitled "The Generation of information to Support Long-Term Manpower Studies of and Planning for Training Programs for Educational R, D, D, & E"

(Volume IV of five volumes)

THE OREGON STUDIES IN EDUCATIONAL RESEARCH, DEVELOPMENT, DIFFUSION, AND EVALUATION

VOLUME IV

PROFILES OF EXEMPLARY PROJECTS IN EDUCATIONAL RDD&E

Part Two of Three Parts
(Development)

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ABSTRACT

This is one of five volumes reporting the results of the Oregon Studies in educational research, development, diffusion, and evaluation (educational RDD&E). It contains 20 case study profiles of educational RDD&E projects, and as such constitutes the data base for the Oregon Studies. The Volume is bound in Three parts. Part One contains profiles of five research and three evaluation projects; Part Two contains profiles of seven development projects; and Part Three contains profiles of five diffusion projects. Each part within the volume contains information that describes the development of the profiles, how to read the profiles, and a glossary of common profile terms. Each profile contains three sets of data: (a) descriptors of general project characteristics, e.g., objectives, timelines, organizational structures, and project "dynamics;" (b) descriptors of personnel working within projects, including background of training, work experience, and job role definition; and (c) descriptors of the work requirements within a project. Work requirement data include descriptions of the outputs that derive from a project, the standards held for those outputs, the operations required to produce outputs to the standards specified, and the knowledges, skills, and sensitivities drawn upon to carry out project operations. Nine hundred and sixty-two outputs of work effort were identified in the 20 projects. Two hundred and ninety-eight of these were analyzed for their work requirements. From this analysis 1148 descriptions of standards, 3722 descriptions of tasks, and 2974 descriptions of knowledges, skills, and sensitivities were obtained. One hundred and thirty-four professional persons were interviewed in collecting these data. The profiles are discussed in the preface to the volume from the point of view of their utility as scientific and training documents.

PREFACE

The present volume contains descriptive profiles of 20 educational research, development, diffusion, and evaluation (educational RDD&E) projects. The volume is bound in three parts. Part One contains profiles of 5 research and 3 evaluation projects; Part Two contains profiles of 7 development projects; and Part Three contains profiles of 5 diffusion projects. In addition, each part within the volume contains information that describes the development of the profiles, information that serves as a guide to reading the profiles, and a glossary of common profile terms. In combination, these materials should permit a reader to study the profiles with sensibility and understanding.

Each profile attempts to portray the essential characteristics of the project it describes and the realities of work requirements within it. Toward these ends, each profile describes: (a) the general characteristics of a project, e.g., objectives, timelines, organizational structures, and project "dynamics;" (b) the characteristics of personnel working within a project, including background of training, work experience, and job role definitions; and (c) the work requirements within a project.

The central data reported in a profile deals with project work requirements. In this regard, each profile describes the outputs of work effort, the standards established for those outputs, the operations required to produce outputs to specified standards, and the knowledges, skills, and sensitivities needed to carry out those operations. An overview of the data sets used to describe these variables and their interdependencies is provided in the reader's guide to the profiles. The rationale for and a full description of the data sets used is provided in Chapter 4 of Volume I of the series of volumes reporting the Oregon Studies.

The profiles were designed to serve the purposes of both science and training. In support of science the profiles serve three functions: (a) the careful description of phenomena of interest; (b) the development of a methodology by which to carry out such description; and (c) the development of a data base that permits parameter identification and comparative analyses. In support of training the profiles serve two functions: (a) they provide a means of gaining insight into the nature of and work requirements within individual educational RDD&E projects; and (b) they provide a means of gaining insight into the nature of and work requirements within the domain of educational RDD&E as a whole. Because these various concerns have combined to make the profiles as they are, each will be discussed briefly.

PROFILES AS BASIC SCIENCE DESCRIPTIONS. Individually and collectively the profiles provide accurate, reliable, and relatively exhaustive descriptions of ongoing RDD&E activities at the project level. All projects described are illustrative of the kinds of RDD&E activities likely to be funded in the decade ahead. The rationale for obtaining such descriptions involved a series of related propositions: (a) research, development, diffusion, and evaluation activities have served as powerful problem solving tools in a wide range of man's endeavors, e.g., medicine, agriculture, and industry, but as yet their systematic application within the context of education has been limited; (b) to have applicability within the context of education RDD&E activities must be adapted to fit particular demands of education; (c) to effectively bring about such adaptation, the demands of RDD&E within education must be understood; (d) at the time that the Oregon Studies were undertaken little was known about educational development, diffusion, and evaluation activities, about how such activities related to educational research, or about how any or all activities related to the improvement of education; and (e) in order to understand matters not understood it is wise to begin by describing them in detail. The rationale for reporting such descriptions in case profile format was less complex: It invited a more detailed description of project characteristics and activities than might otherwise be provided. This was assumed to be true for both the identification of the variables to be attended to in describing projects and the exploration of the interactions of those variables.

PROFILES AS METHODOLOGICAL PROVING GROUND. The decision to describe educational RDD&E projects in case profile terms required that a methodology be developed that would generate "case study" data. The development of such a methodology became a primary focus of the Oregon Studies, and the preparation of profiles was, to a large extent, a natural culmination of that focus. Two assumptions accompanied the emphasis on methodological development: (a) the Oregon Studies represented the first in a series of empirical studies to be undertaken on the nature of educational RDD&E; and (b) greater benefits would accrue to education over the long term by directing limited resources to the development of strong methodology than would accrue had the investment of resources been directed to the collection of large amounts of data with a weaker methodology.

As a proving ground for methodology, the profiles provided a basis for making two kinds of judgments: (a) judgment as to the sophistication of the methodology, i.e., the extent to which the methodology generates accurate, reliable, and reasonably exhaustive descriptions of educational RDD&E activities; and (b) judgment as to the robustness of the methodology, i.e., the extent to which the methodology can be applied to widely varying projects with equally productive results. Evidence as to sophistication was obtained by submitting completed profiles of projects to the directors of those projects for review and approval. In all cases the profiles met the criteria of sophistication outlined above (see the Notes on the Development of the Profiles for project director evaluations). Evidence as to robustness was obtained by applying the methodology to the 20 projects described in the present volume. These projects varied widely, and it was assumed that if the methodology was indeed adequate in terms of its robustness each of the 20 projects could be described with equal facility. It was also assumed that the data generated in relation to each project would be roughly comparable. As will be seen upon reading the profiles, those criteria have been met. An overview of the methodology is provided in the reader's Guide to the profiles. A detailed description of the methodology, as well as a description of the manner in which it evolved, is provided in Volume V of the series of volumes reporting the Oregon Studies.

PROFILES AS A DATA BASE FOR PARAMETER IDENTIFICATION AND COMPARATIVE ANALYSES. The decision to view the profiles as a data base for identifying or "mapping" the parameters of the domain of educational RDD&E emerged as a logical extension of the two previously discussed profile functions. Since extensive descriptive data on the nature of educational RDD&E were to be made available as a result of profile development, and since profiles were to be prepared for widely varying projects to test the robustness of a methodology, the selection of the projects to be described was approached from the point of view that they represent a sample of the projects that exist within the domain of educational RDD&E as a whole. Given the small number of projects that could be described in case study form with the resource base available, and given the variability that was to be reflected in those projects, no illusions were held about the representativeness of the sample that could be drawn. At the same time, it was reasoned that if the projects to be described sampled at all well the variability that existed in projects within the domain, the descriptions of those projects would provide at least a beginning base for sketching an "outline map" of the parameters of the domain. As an outgrowth of this kind of reasoning, it was decided that projects should vary systematically with respect to major sources of variability in educational RDD&E projects as a whole. Accordingly, the 20 projects described vary as to focus (research, development, diffusion, and evaluation), size (a funding base of less than $100,000 per annum, between $100,000 and $250,000 per annum, and over $250,000 per annum), and setting (public schools and state departments of education, colleges and universities, publicly funded laboratories and R&D centers, and privately funded R&D centers). A description of the procedures followed and criteria used in selecting the 20 projects is provided in Chapter 3 of Volume I of the series of volumes reporting the Oregon Studies.

As a data base for mapping the domain of educational RDD&E, the profiles actually serve two functions: (a) they provide a basis for mapping the parameters of the domain; and (b) they provide a basis for mapping the commonalities or central tendencies of the domain. As a basis for parameter mapping the profiles constitute an excellent source of data. Even though the project sample is small, and the absolute data base on which to prepare maps limited, projects have been selected so as to insure that they are reasonably representative of the range of projects to be found within the domain of educational RDD&E. Thus, the range of personnel employed in the 20 projects described, the range of project strategies followed, the range of organizational structures used, the range of outputs produced, the range of tasks performed, the range of standards held, and the range of knowledges, skills, and sensitivities drawn upon in their execution can be assumed to be reasonably representative of the range of such things to be found within the domain as a whole. The technical appendices that accompany Volume I of the series of volumes reporting the Studies summarize these data.

Given the sampling strategy that was followed, it is obvious that the profiles constitute a much weaker data base for mapping commonalities or central tendencies. Clearly, the sample was drawn to highlight the parameters of the domain rather than its central tendencies. Nevertheless, the data are amenable to central tendency analyses, and they were undertaken. The "outline maps" presented in Chapters 6, 7, and 8 of Volume I of the series of volumes reporting the Oregon Studies summarize these data.

PROFILES AS TRAINING AIDS. As the most detailed descriptions of ongoing RDD&E activities available, it was anticipated that the profiles could serve a valuable training function. Readers should find, for example, that they illustrate the nature of the work found within educational RDD&E projects, the nature of the tasks involved in carrying out that work, the knowledges, skills, and sensitivities needed to carry it out, the interpersonal and interagency dynamics involved in project operation, etc. Such information should be of value to students preparing to enter the field of educational RDD&E, staff who have just entered the field, or project directors who need to provide on the job training.

PROFILES AND CROSS PROFILE ANALYSES AS A BASIS FOR TRAINING PROGRAM DESIGN. By treating each of the 20 profiles as reliable descriptions of "what life is like" within the context of educational RDD&E projects, by treating the summated data as a trustworthy description of the range of project activities within the domain as a whole, and by having at hand whatever central tendency data that can be gleaned from the comparative analyses of projects, the designer of training programs should be in a position to make reasonably informed decisions as to what the focus and content of those programs should be. In combination these data begin to provide the designers of training programs with a sense of the arena within which educational RDD&E personnel must function, and with a sense of what has to be done to function effectively within that arena. Chapter 14 of Volume I of the series of volumes reporting the Oregon Studies spells out some of the implications that derive from these various data sources for the design of training programs.

A wide range of persons have been involved in the preparation of the profiles. In fact, nearly all persons involved in the Oregon Studies have contributed in one way or another, for essentially all activities undertaken within the studies have pointed towards profile production. Since other volumes detail the activities that have been related to profile development, e.g., the development of the methodology used to collect the data reported in the profiles (Volume V) and the development of the conceptual framework that guided the methodology (Volume III), the persons involved most directly in those activities need not be recognized here. Those who have been most directly involved in profile preparation do, however, and the purpose of the following paragraphs is to make that recognition public.

It is proper to acknowledge first those persons in the U.S. Office of Education who had the wisdom and courage to insist upon the development of case profiles, and their accompanying methodology, as the primary outputs of the Oregon Studies. In this regard the efforts of Ms. Cora Beebe and Drs. John Egermeier, Sue Klein, and Paul Messier deserve special recognition. So do the efforts of Dr. John Hopkins of Indiana University, the U.S. Office of Education's special consultant to the project. The contributions of these five people to the design and implementation of the case profiles and the supporting methodology have been of inestimable value. Also deserving of recognition is the role played in the project by USOE project officers. Their willingness to review projects to help in identifying those that appeared to meet the criteria for inclusion in the Oregon Studies was clearly beyond their established duties. My thanks to all in USOE who have given so much.

I wish to express my thanks also to the directors of the various projects for which case profiles were prepared, and to their staffs. It is not easy to give up as much as three days of time when conducting a major RDD or E project, or to release major staff members for as much as a day or a day and a half to do other than project work. Participation in the Oregon Studies represented a sizeable investment of these people's time and energy, and I wish to express my deepest appreciation for their willingness to make such an investment.

Finally, I wish to express my thanks to the staff of the Oregon Studies who were responsible for data collection, reduction, and profile preparation. Since so many have been involved, and in so many different ways, I will simply list names by activity. Thus, the task of refining the criteria for project selection, identifying projects that met those criteria, and making initial contact with those projects relative to participation in the study: the team of Mr. Steve Anderson, Mr. Darrell Clukey, Dr. Dale Hamreus, and Dr. Jim Nord; the task of making site visits for purposes of final project selection: the team of Dr. Harry Ammerman, Dr. Dale Hamreus, and Mr. Greg Thomas; the task of data collection, reduction, and initial profile preparation: Mr. Loring Carl, Mr. Norman Crowhurst, Mrs. Lee Green, Mr. Herb Hill, Mrs. Diane Jones, Dr. Rod Myers, Dr. Jim Nord, Mr. Dean Pielstick, Mr. Clark Smith, and Mr. Greg Thomas; the task of profile editing and refinement: Dr. Harry Ammerman, Mr. Loring Carl, Mr. Darrell Clukey, Dr. Kevin Morse, and Mr. Greg Thomas; the task of coordinating and scheduling the interview teams: Mr. Greg Thomas; the task of interview team training, and the task of administering quality control checks on all data reduction: Mr. Loring Carl and Mr. Clark Smith; the task of tracking all data from the time it came in from the interview teams until it was organized and presented within a completed case profile, including the task of editing each profile to assure consistency and quality: Mr. Darrell Clukey; the task of transferring the reduced data to computer storage, the preparation of computer programs for the analysis of the data, and the execution of those analyses: Mr. Bill Hickok; the task of overall activity coordination: Dr. Harry Ammerman.

My deepest thanks to all for tasks well done.

H. Del Schalock
Director of the Oregon Studies

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An Analysis of the Stability and Instability of Student Growth
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Perceptual and Memory Components in Reading
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-- PART THREE --

DIFFUSION PROJECTS

(separately bound)

Alternative for Learning Through Educational Research and Technology
Herbert E. Hill, Diane G. Jones, and Loring M. Carl

Paul L. Dunbar Community Learning Center
Norman H. Crowhurst

Educational Resources Information Center Processing and Reference Facility
Norman H. Crowhurst

Children's Television Workshop

R. E. Myers, Gregory P. Thomas, and Clark A. Smith

The Assessment of Exemplary Reading Programs
R. E. Myers

NOTES ON THE DEVELOPMENT OF THE PROFILES

Fourteen specifications guided the development of the profiles that appear in the present volume. Seven of the 14 pertained to the content of the profiles.

1. They were to accommodate widely varying data within a standard format, that is, a single format was to accommodate data emerging from an "evolving" case study methodology that was to be applied to projects of widely varying characteristics;
2. They were to convey both the "essential" features of a project (as opposed to every possible feature), and the "realities" of work within it;
3. They were to include a description of the context within which a project was operating;
4. They were to include both, but discriminate between, subjectively and objectively derived data;
5. They were to include the "raw" data from which categorized data emerged;
6. They were to highlight the training implications that emerged from the study of a particular project; and
7. They were to avoid description of the substantive content of a project, except as needed to understand a project within the context of the profile.

Four specifications pertained to the form of the profiles:

1. They were to preserve the anonymity of persons within projects;
2. They were to be candidly written, but without evaluative overtones and without reference to outside standards for comparative purposes;
3. To the extent possible, each profile was to make a unique contribution to the set of profiles (thus allowing individual differences between profiles with respect to degree of emphasis on various classes of data, depth of detail, etc.); and
4. They were to be readable and understandable by persons just entering the field.

Three specifications pertained to the means by which the profiles were prepared:

1. The profile design, and the linkage of that design to data, was to be such that persons relatively unskilled in professional report writing could, without elaborate training, assemble and prepare a profile;

2. Profiles were to be prepared and made available for review and/or use as soon as possible after the analysis of a project had been completed; and

3. Profiles were to be approved before publication by the directors of the projects described.

In sum the task of the Oregon Studies was to develop a procedure and a format for writing profiles that would display widely differing kinds of data from widely differing projects in a manner that would be easily understood, and that would allow for comparability across projects while retaining the ability to present characteristics idiosyncratic to individual projects. Furthermore the procedure and format were to accomodate the variability introduced in data by an "evolving" methodology, and were to be able to be applied by persons with little or no experience in formal report writing. The profiles reported in the volume meet or have met these specifications.

Procedurally, profile design progressed through six identifiable stages. The first stage occurred prior to data collection activities, and involved the outlining of alternative profile formats for anticipated data. These were prepared for conference review in conjunction with the first review of the proposed methodology (July 1970). In the second stage of development, alternative profile formats were prepared for a single project using trial data collected on that project. These were prepared for conference review in conjunction with the second review of the methodology (October 1970). It was through these two external review conferences that most of the specifications relative to the development of the profiles emerged.

The third stage in the evolution of the profiles involved the development of a format that accommodated both the specifications that had been developed, and the data that were by then emerging from application of the methodology. Four profiles were prepared according to this format, and submitted for conference review in conjunction with the third external review of the methodology. This was held in March 1971, and constituted the last formal review of the profile format. In all three of the external review sessions, participants included the consultants to the Oregon Studies, training program directors, U.S. Office of Education personnel, and the authors of the conceptual papers that appear in Volume III of the series of volumes reporting the Oregon Studies.

Following the March review, the profile format went through three additional "fine tuning" stages in its development. The first of these (Stage 4 in the development of the profile formats) incorporated both the recommendations received at the March conference and the subtle shifts that occurred in data collection strategy following that conference. Six profiles were prepared using this particular format. The next to last refinement in format (Stage 5) reflected the final refinement in data collection methodology, and was used in describing the remaining 10 projects analyzed. The final refinement in format (Stage 6) involved an internal review of the total set of profiles from the point of view of standardizing terminology, table headings, and category labels.

Because of the evolution of data collection methodology and profile format during the course of the Oregon Studies, it was not possible to achieve complete standardization across profiles. The first four profiles prepared contained data that were sufficiently different from the data reported in the next six, and the data reported in those six were sufficiently different from that reported in the last 10, that differences between the three sets could not be eliminated by the final refinement effort. As a consequence, the total collection of profiles reflect three recognizably different formats, as well as three slightly different data sets. All profiles contain the same basic chapter organization, however, and the same major headings within chapters, so differences between profile sets are minimal. The GUIDE TO READING THE PROFILES has been designed both to introduce the reader to the substantive content and organization of the profiles, and to place the differences in profile format in perspective. Chapter 4 of Volume I of the series of volumes reporting the Oregon Studies traces the implications of profile format differences for cross-project analyses.

A number of procedures were adopted as guides to the preparation of profiles. Profile writers were always members of the data collection team and they always knew in advance when they were to serve as writers. To insure consistency across writers, chapter titles, major headings within chapters, data tables and figures, and data sources were standardized. During the actual process of preparing the profiles, writers were instructed to make use of all record forms, tape recorded interviews, and data presentations. Debriefing sessions conducted with the members of the data collection team were held to further the writer's understanding of both the project as a whole and the data collected in relation to it.

Profile drafts were given substantive critiques by all members of the data collection team, and editorial critiques by at least two other Oregon Studies staff. Where extensive revisions were needed, the revised drafts were subjected a second time to a complete review and critique process. Upon completion, each profile was submitted for review and approval to the responsible officer of the project being described. The last five profiles submitted to project officers were accompanied by a profile rating sheet in order to obtain specific information as to their adequacy. The results of these ratings are summarized in Table 1.

TABLE 1

Frequency of Ratings as to Profile Adequacy
(N = 5)

Focus of rating	Rating Schedule A	Rating Schedule B	Rating Schedule C
1. Description of organizational structure	5	0	0
2. Description of organizational operations, interrelationships	4	1	0
3. Description of the ends being sought by the project	4	1	0
4. Representativeness of all outputs indexed (Ch. II)	3	2	0
5. Representativeness of the outputs analyzed (Ch. III)	4	1	0
6. Accuracy of the data presented on outputs (Appendix)	4	1	0
7. Overall representativeness of the Profile	4	1	0

Rating Schedule

Check box A, B, or C as follows:

A = Representative of a majority of operational concerns.

B = Representative of only a part of operational concerns (concerns of significant proportions omitted).

C = Major concerns not covered.

A GUIDE TO READING THE PROFILES

Since the profiles are relatively complex documents, and since they vary in format (see NOTES on the development of the profiles), a guide to their reading has been prepared. The guide is designed to orient the reader to (a) the classes of data reported in the profiles, (b) the procedures followed in collecting those data, (c) the trustworthiness of those data, and (d) the manner in which the data have been organized within the profiles. If used in conjunction with the NOTES on the development of the profiles and the GLOSSARY of profile terms that also appear in the volume, a reader should have no difficulty in making his way through the profiles.

Classes of Data Reported in the Profiles

As indicated in the preface to the volume three major classes of data are reported in each profile: (a) descriptors of general project characteristics; (b) descriptors of project personnel; and (c) descriptors of project work requirements. Work requirement data are reported both in terms of work activities associated with job roles and work requirements associated with project outputs. The data sets that comprise these various data classes are described briefly in the paragraphs that follow. The rationale for and full description of the data sets appear in Chapter 4 of Volume I of the series of volumes reporting the Oregon Studies.

Data Sets Used in Describing the General Characteristics of Projects

Five data sets are used to describe the characteristics of a project as a whole: (a) the objectives of, rationale for, and contributions to be made by a project; (b) the timelines established for completing work within a project; (c) the organizational structure within which the work of a project is carried out; (d) the political-institutional-intellectual context within which a project rests; and (e) the "dynamics" of project operation. The first three data sets are self-explanatory. Context data pertain to the relationship of the project being studied to its sister projects, to the activities of the administrative unit within which it rests, and to the broader political-institutional context within which it rests. These relationships are portrayed in the form of a "context map."

As used in the Oregon Studies, "project dynamics" is a catch-all term that involves information pertaining to procedures, feelings, patterns of behavior, or anything else that can be used to convey a sense of either the "essence" of or the "reality" of working within a particular project. The focus of that which is reported may be project operations, factors influencing project operations, and/or the consequences of project operations. Operationally, the data pertaining to project dynamics involves the pooled perceptions, observations, hunches, and insights gained by the staff of the Oregon Studies during the three to five day on-site visit required for project analysis.

No formal category sets have been developed for coding any of these data. All are reported in the form of narrative statements within the context of the case profiles.

Data Sets Used in Describing Project Personnel

Three data sets are employed in describing project personnel: (a) the background of training and work experience of professional staff; (b) a description of the job or jobs held by professional staff; and (c) the support services and resources available to staff in the performance of their respective job roles. All of the data within these sets are reported in terms of questionnaire items.

Data Sets Used in Describing Work Activities Associated With Job Roles

Two data sets are employed in describing work requirements associated with job role: (a) the perceived requirements associated with a particular job held; and (b) the emphasis given to various classes of work activities within the context of a particular job held. These data are also reported in terms of questionnaire items.

Data Sets Used in Describing Work Requirements Associated With the Production of Project Outputs

Four data sets are employed in describing work requirements associated with the production of project outputs: (a) the outputs of work effort per se; (b) the standards held for those outputs; (c) the operations required to produce specified outputs to specified standards; and (d) the knowledges, skills, and sensitivities required to carry out those operations. These are the primary data sets reported in the profiles, and as such they are far more complex and extensive than the other data sets reported.

In attempting to describe the outputs of projects, and the standards, operations, and enablers that relate to them, it was necessary to establish a number of category sets to handle the complexity that was found. Two approaches were taken to the development of these sets: (a) a conceptual-empirical (deductive) approach; and (b) an empirical-conceptual (inductive) approach. In the former, category sets were developed as an extension of the conceptual framework that guided the Studies;[1] in the latter, they were developed in response to the data emerging from the study of ongoing projects.[2] Operationally, however, the two approaches were complementary, for the conceptual-empirical approach yielded category sets that functioned as relatively broad, general organizers of the data, and the empirical-conceptual approach yielded category sets that functioned at a "close to the source," descriptive level. Figure 1 provides a summary of the conceptually derived sets used to organize information about project outputs, standards, operations, and enablers. Figure 2 provides a summary of the

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[1] For a description of the conceptual framework that guided the empirical thrust of the Oregon Studies see Schalock, H.D. and Sell, G.R., "A Framework for the Analysis and Empirical Investigation of Educational RDD&E," in Chapter 4 of Volume III of the series of volumes reporting the Oregon Studies.

	OUTPUTS	STANDARDS	OPERATIONS	ENABLERS
STRUCTURE	Products	Output		Knowledge
	Events	Process		Skill
	Conditions			Sensitivity
FUNCTION	Policy Setting			
	Management			
	Production			
CHARACTER	Knowledge			
	Technology			
	Implementation			
	Information			
LEVEL	Focal		Activities	
	Component		Tasks*	
	Facilitating		Actions	

FIG. 1. Category sets used to describe at a broad, conceptual level the properties of outputs, standards, operations, and enablers.

*Of this set, only task level descriptions were obtained. Time and resources did not permit an analysis of operations at the level of actions, and the activities set was left to be derived empirically.

empirically derived category sets used to organize the same information, that is, statements describing work requirements in the language of persons working in the field. The various primary and cluster categories that make up these sets, as well as the procedures followed in their development, are described in Chapter 4 of Vol. I of the series reporting the Oregon Studies. The number of data statements (interviewee statements) classified within these various category sets include 1148 that are descriptive of output standards, 3722 that are descriptive of output related tasks, and 2497 that are descriptive of output related enablers.

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[2] To some extent this is an over simplification, for the conceptually derived categories were tested empirically in the course of their derivation, and the empirically derived categories were always influenced by conceptual considerations. (See Chapter 2 in Volume I of the series of volumes reporting the Oregon Studies, or Volume V, for a discussion of the procedures followed in the development of the methodology.)

	OUTPUTS IDENTIFIED	OUTPUTS ANALYZED	STANDARDS	TASKS	ENABLERS
Number of PRIMARY Categories Used to Classify Interviewee Statements	299	167	79	280	136
Number of CLUSTER Categories Used to Classify Primary Categories	51	46		20	

FIG. 2. Category sets used to describe at a "close to the source," empirically derived level the properties of outputs, standards, tasks, and enablers.

The Interdependence of Data Sets

As indicated in the preface, each case profile was to describe not only the variables listed in the preceding paragraphs, but their interdependencies as well. This in turn required that a way be found to collect data on those interdependencies. Accordingly, a schema was developed which placed the full set of variables within the context of an interacting whole. Within this context OUTPUTS were adopted as central, that is, all other data sets were linked to them. Procedurally, this required that outputs of work effort within a project be identified, a set of these be selected for analysis, and for each output analyzed establishing the STANDARDS set for its production, the OPERATIONS required for its production, the ENABLING KNOWLEDGES, SKILLS, and SENSITIVITIES needed for its production, the PERSONS involved in its production, and the RELATIONSHIP of that output to the other outputs involved in the work of a project as a whole. It was also possible to link a particular output to the organizational structure of a project, the context within which the project rested, and even the "dynamics" of a project, though not so directly as in the case of variables that depended upon output linkage for their definition. The interaction of these various classes of data is illustrated schematically in Figure 3.

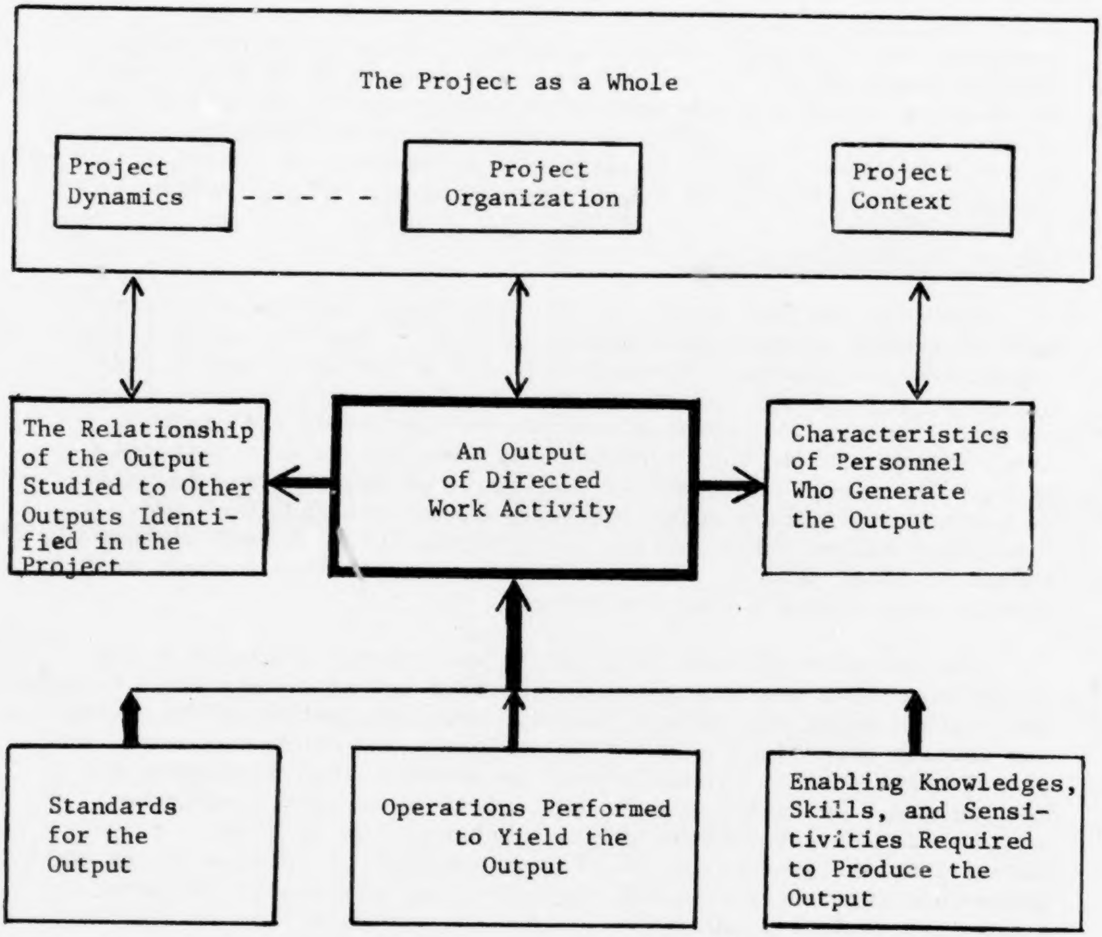
The Project as a Whole
Project Dynamics
Project Organization
Project Context
The Relationship of the Output Studied to Other Outputs Identified in the Project
An Output of Directed Work Activity
Characteristics of Personnel Who Generate the Output
Standards for the Output
Operations Performed to Yield the Output
Enabling Knowledges, Skills, and Sensitivities Required to Produce the Output

FIG. 3. Classes of information sought in describing a project, and their relationship to outputs of work effort.

Procedures Followed in Data Collection

Three relatively distinct procedures were employed in collecting the data reported in the profiles. By and large these corresponded with the three major classes of data collected. All data, however, were collected within the context of an "on-site" visit by a data collection team from the Oregon Studies. Depending upon the size and complexity of a project, teams consisted of from two to six people, and the length of the site visit extended from three to five days. An overview of the procedures used in collecting the various classes of data reported in the profiles is provided in the paragraphs that follow. Additional detail is provided in Chapter 4 of Volume I, and in Volume V, of the series of volumes reporting the Oregon Studies.

General Project Descriptors

Probably the best label for the procedures used in collecting data on general project descriptors is that of "non-obtrusive." The objectives of a project, the rationale for a project, project time lines, organizational structures, and the like, were obtained from project proposals and other documents descriptive of the project. Also, information on the "dynamics" of the projects were gathered through incidental observation, the recall of casual comments made by project staff while being interviewed, and the "hunches" or "insights" gained while working with project data. Almost without exception these sets of data were able to be collected without intrusion upon people's time and energy.

The one data set used to describe the general characteristics of projects that was intrusive was the data set that described the context within which the project rested. Some information of this kind was usually able to be gained from proposals and other documents, but in all cases project directors were interviewed when developing a context map. In some instances this amounted to little more than confirmation of information gained elsewhere, but in others it involved both the generation and piecing together of information about intra- and inter-institutional linkages that were simply not made explicit in existing materials. Generally speaking, the larger the project the more complex its political-institutional-intellectual linkages, and in some cases, for example the Children's Television Workshop, the development of a map to depict these linkages was a major undertaking.

Personnel and Work Activity Descriptors

All of the data that describe the personnel associated with a project, and all of the data that describe work activities associated with job roles, were collected through questionnaires. These were administered by members of the Oregon Studies staff, either while visiting the project site or through telephone. Three questionnaires were involved: (a) a general project questionnaire; (b) a job/task inventory; and (c) a general activities questionnaire. The data reported from the three questionnaires are referred to in the profiles as form 02, 03, and 04 data respectively. Copies of the three questionnaires may be found in Volume V of the series of volumes reporting the Oregon Studies.

Output and Work Requirement Descriptors

All data on outputs and work related to their production were collected through interview. The interview strategy called for: (a) identifying outputs associated with a project (an output index); (b) ordering those outputs according to their interdependencies (an output map); (c) selecting from the map those outputs for which work requirement data were to be obtained; (d) identifying persons most directly responsible for and/or most directly involved in the production of those outputs; and (e) interviewing those persons in relation to the standards held for the output being analyzed, the tasks required to produce the output, and the knowledges, skills, and sensitivities needed to perform the required tasks. The selection of outputs to be analyzed was done by the data collection team, on site, after an output map had been established and a sense had been gained as to the outputs that were most critical to the project. Persons interviewed provided information relative to his or her own contribution to the production of a particular output, as well as the contributions of others (a distinction between self-other data was maintained throughout the project.) As familiarity with a project grew, adjustments were made as needed in the output map, the selection of outputs to be interviewed around, and the matching of interviewees with outputs. All interviews were tape recorded, and all data were reduced from the recordings by the person who did the interviewing.

The reduction of the interview data involved a multistep process: (a) editing tapes to identify data statements within them, that is, statements pertaining to standards, tasks, and enablers; (b) the recapitulation, or "recapping", of data statements into a readable, grammatically correct form, that is, independent clauses and/or sentences (care was taken not to destroy the original language of the interviewees in this process); (c) the transfer of the recapped statements to color-coded summary sheets that corresponded to the various data sets being used; (d) the coding of the recapped statements by a two person coding resolution team (during this process the coding team was free to call upon members of the data collection team for statement clarification, interpretation, context building, etc.); and (e) the storage of the coded data in computer files in a way that permitted the interdependencies within the data to be maintained. A record of all steps in the data collection and reduction process was maintained from the time of first contact with a project until all data on that project had been computer stored and verified.

The Trustworthiness of the Data

Since the classes of data reported in the profiles were collected by various means, each must be considered separately as to its trustworthiness. Accordingly, the potential sources of error that reside within each data class, and the steps taken to control them, are reviewed in the paragraphs that follow.

General Project Descriptors

Four of the five data sets used to describe the general characteristics of projects made use of working documents. These included project objectives, timelines, organizational structures, and context maps. Typically, the document used had been prepared by project directors. To the extent that such documents can be accepted at face value, and to the extent that the Oregon Studies staff did not introduce error in reporting the substance of those documents, the data sets that made use of them were subject to few sources of error. As a consequence, no formal measures of trustworthiness were prepared for them.

Judgments relative to the trustworthiness of the data reported on project dynamics is another matter. It will be recalled that these data consist of the pooled observations, hunches, "insights," and choice tidbits of information gleaned by members of the data collection team from a wide variety of sources. It will also be recalled that these data intentionally were to be subjective and impressionistic. As a means of reducing gross error all final descriptions of the dynamics of projects were read and confirmed by all members of the data collection team that visited a project, but no formal measures as to the trustworthiness of such data were obtained. For purposes of profile presentation, however, the data on project dynamics are reported.

Personnel and Work Activity Descriptors

Since the data sets describing personnel and work activities were derived through questionnaire methodology they were subject to all the sources of error known to operate within that methodology, for example the error that is introduced through the selection of questions asked, the possibility of multiple interpretations of those questions, and the lack of opportunity to determine falsification or shoddiness of response to the questions. The steps taken to control these sources of error were of two kinds: (a) reasonable care in the development and testing of the questionnaires prior to their utilization for purposes of data collection; and (b) the administration of the questionnaires while the data collection team was on site. The first step involved a number of field trials of the questionnaires, and a number of revisions in them on the basis of those trials. The second allowed the questionnaires to be introduced within the context of the data collection effort as a whole, and within that context an opportunity to clarify troublesome questions about or within them. In combination, it is believed that these procedures sufficiently reduced the typical sources of error that enter the collection of questionnaire data that the data reported can be viewed with a fair degree of confidence.

Output and Work Requirement Descriptors

Just as the personnel and work activity data were subject to the error typically associated with use of questionnaires, the output and work requirement data, since it was collected through interviews, were subject to the error typically associated with interviews. Four sources of error have always been troublesome in this regard: (a) the selection of interviewees as data sources; (b) the information elicited from interviewees about work requirements; (c) the coding of the information obtained from interviewees; and (d) the storage, retrieval, and analysis procedures used in manipulating the coded data.[3] The procedures followed in the Oregon Studies to combat these sources of error are summarized in Table 1. Given the procedures followed, and the coding reliability obtained, it seems reasonable to view the output and work requirement data with a good deal of confidence.

Profile Organization

It will be recalled from reading the NOTES on the development of the profiles that three variations in profile format will be found in the present volume. These correspond to variations in the nature of the data collected at various points in the Studies, and represent one of the less fortunate consequences of the decision to emphasize methodological development (see Preface). Although the differences in the data presented in the three profile formats are not great they can be confusing to a reader when first encountered. The purpose of this section of the GUIDE is to introduce the reader to the general organization of the profiles, and to spell out how the two earlier profile formats (Formats 1 and 2) differ from the final format (Format 3).

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[3] When the profiles are being considered as a data base for cross-project analyses, other sources of error must be considered. Two critical sources are (a) the adequacy of the sample of projects drawn and (b) the adequacy of the sample of outputs selected for analysis within a given project. These are sources of error that relate to the generalizability of data, however, and are not of primary concern in considering the case profiles as descriptions of individual projects.

TABLE 1

Procedures Followed in Controlling Sources of Error
In Output-Work Requirement Data

SOURCE OF ERROR	PROCEDURES FOLLOWED TO REDUCE ERROR
Interviewee Selection	Only staff intimately acquainted with or involved in the production of an output were selected for interview. The relationship of the interviewee to an output was always confirmed by the project director, the person to be interviewed, and the immediate supervisor of that person. Data reported by an interviewee on the work of others in relation to an output were noted and coded separately.
Data Generation	A structured interview procedure was used to obtain data on the standards, tasks, and enablers associated with a particular output. In the interview, standards were the first to be identified, followed by the tasks engaged in to produce the output to those standards, followed by the knowledges, skills, and sensitivities drawn upon in carrying out the tasks identified. Stylistic variations in interviewing were permitted so as to accommodate either interviewer or interviewee differences, but during the course of an interview all data sets were exhausted. (For a detailed discussion of interview procedures see Volume V of the series of volumes reporting the Oregon Studies).
Data Reduction	A carefully established set of procedures and decision rules were followed in "recapping" the interviewee statements, and in coding the recapped statements in terms of appropriate data sets. The recapped statements were first checked for their completeness and adequacy by the data coordinator upon the return of the data collection team from a project site. They were checked again by the coding team. Incompleteness, or error, or lack of clarity detected on either of these checks required that the recapped statements be revised until they were acceptable at both quality assurance checkpoints. To insure reliable coding, team coder agreements were calculated. Using the recapped statements in three case profiles as a base for calculating coder reliability, and separating first and second codings by a three month period, coding agreements for items in each data set, with one exception, ranged between .69 and .96. Reliability in coding task statements was .60. Detailed coder reliability data are reported in Chapter 4 of Volume I of the series of volumes reporting the Oregon Studies.
Data Storage and Retrieval	As soon as the recapped statements had been coded for a particular project the codes were forwarded to the data coordinator for a check of their completeness, and then forwarded to the coordinator of data storage and retrieval for transfer into computer storage. After storage, repeated checks were run to insure that the initial computer entries were correct, and the computer center manipulations over time had not destroyed or reordered the data as it was originally stored.

Profile Format 3

Ten profiles in the volume meet the most advanced format requirements.[4] These are profiles 1, 2, 6 and 7 in Part One of the volume; profiles 9, 10, and 11 in Part Two; and profiles 16, 17, and 18 in Part Three. As a set these profiles reflect the most advanced form of the data collection methodology, were the last to be prepared, and appear as the first profiles to be read in any of the three parts to the volume, as well as the first to be read in the Evaluation section of Part One. Also, all are organized into six chapters: an Overview; a Description of the Parameters of the Project; a Summary of Data; Supplementary Data; Project Dynamics; and Implications for Training. Each profile also contains an Appendix that houses the "recapped" data statements from which the output-work requirement data summaries have been prepared.

An overview of the contents of each chapter in the format 3 profiles follows. It will be seen from these overview statements that the three classes of data collected on a project are collapsed and/or integrated for purposes of their presentation within profiles.

CHAPTER I: OVERVIEW. This chapter provides the first view of a project as more than a title. It provides an orientation to the nature of the project, its goals, and its reasons for being, and serves as the framework into which the balance of the profile data are fit. Structurally, the overview chapter consists of the following parts :

(a) Synopsis of the Project
(b) Objectives, Rationale, and Significance of the Project
(c) Context in Which the Project Operates

Chapter I is generally not more than 6 pages in length, and it is designed as an "abstract" so that readers may determine whether they wish to read the profile as a whole.

CHAPTER II: PARAMETERS OF THE PROJECT. Chapter II emphasizes, and makes quickly available, a first set of "hard" data about a project. Standard sections include:

(a) Staff structure;
(b) Project roster;
(c) Index of outputs;
(d) Output map.

Staff structure data involves a description of the organizational structure adopted by a project, and how staff members are distributed within that structure; project roster data involves a description of the roles played and/or functions performed by personnel within the project; an output index is an annotated listing of the outcomes of work effort that project staff identify as critical to the success of the project;

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[4] Each profile is identified as to its format number on the back of the profile title page.

and an output map is a schematic portrayal of the interdependencies between project outputs. More is said about output maps later in the GUIDE.

CHAPTER III: SUMMARY OF DATA. In terms of the data sets described previously, this chapter would be more accurately titled "Summary of Work Requirements for Output Production." Three data sets are summarized in the Chapter: (a) the standards held for the production of an output; (b) the tasks engaged in to produce an output to the standards set for it; and (c) the knowledges, skills, and sensitivities required to perform those tasks. Each of these data sets is displayed in standard tables as frequencies of category citations. The narrative text of the chapter deals principally with the data displayed in the tables, and the interrelationships of those data.

CHAPTER IV: SUPPLEMENTARY DATA. The chapter on supplementary data varies to some extent as to the specific data it contains. In general, however, the following data sets are reported:

(a) Kinds of outputs generated at varying stages of project completion;

(b) The distribution of outputs by their alternative classifications, i.e., structure, function, character, and level;

(c) Summaries of staff backgrounds;

(d) Individual job descriptions;

(e) Interviewee responses to questionnaire items relating to position requirements, support resources, and project management;

(f) Interviewee responses to questionnaire items citing emphases given to various classes of work activities;

(g) The funding base of the project.

Tables of the data are provided when they serve to provide a focus to the discussion. Meaningful relationships with data reported in other chapters are also pointed out.

CHAPTER V: PROJECT DYNAMICS. This chapter, by design, is the least structured of the profile chapters. The purpose of the chapter is to round out the profile by reporting "impressionistic" observations about the project. The "data base" for the Chapter was the hunches, observations, insights, etc. gained by the data collection team during their three to five day stay at the site of the project. These impressions are reported in whatever sequence, form, and substance the profile writer considered best in calling out the significant and unique features of project operation. The freedom of the dynamics chapter to vary in focus and content was considered essential to extending the meaning of the data collected. It was also seen as essential to methodological development, for it served as the vehicle by which new data thrusts were identified for inclusion in the methodology.

The substantive focus of the comments included in most project dynamics chapters includes some subset of observations with respect to staffing patterns, project management structures and procedures, management "styles," project related commitments, substantive issues that arise within projects, affective issues, and agency interrelationships. The discussion of such observations is linked, when appropriate, to "hard" data. The tenor of the discussion is intended to be non-judgmental and instructive.

CHAPTER VI: IMPLICATIONS FOR TRAINING. In this chapter the knowledge gained about a project is assessed with respect to its implications for training. In this assessment the data reported in the profiles generally are treated very briefly, for it is assumed that the reader can draw his own conclusions from his reading. Instead, attention is directed to comments or recommendations made about training by project personnel, or which are implied by the nature of the data collected. The discussion frequently focuses on training needs mentioned by project staff in relation to problems or difficulties in the project. To this extent, the discussion tends to highlight areas of competence in which preparation was weak.

PROFILE APPENDIX. The last chapter in each profile is followed by an appendix that contains the "raw" data that is the basis for the coded data reported in Chapter III. The raw data consists of the paraphrased or "recapped" statements of interviewees that describe the standards, tasks, and enablers associated with the generation of outputs. Category code numbers are included with each statement to facilitate their location in the various tables presented in Chapter III. The importance of this appendix extends beyond its function as an aid to the reader, for it represents what is presumed to be one of the most meaningful forms in which the data collected in the Oregon Studies can be presented for purposes of training. Furthermore, the profile appendix is the only place where the raw data on standards, tasks, and enablers appear.

Profile Format 2

Six profiles in the volume were prepared according to the format that preceeded in time the format just described. These are profiles 3, 4,and 8 in Part One of the volume; 12 and 13 in Part Two; and 19 in Part Three.

The main differences between formats 2 and 3 lie in the language used to describe project outputs. In format 2 the language of output structure, function, character, and level was not in use, and the distinction between products, events, and conditions had not as yet emerged. In their place was a language of production and management "products," where products served as a loosely defined term to cover what subsequently was recognized as products, events, and conditions.[5]

These differences are reflected in the content of Chapters II and III of the format 2 profiles. In all other respects both the content and organization of format 2 profiles are consistent with those reported in format 3.

Profile Format 1

Four profiles reported in the volume were prepared according to the first profile format developed. These are profiles 5 in Part One of the volume; 14 and 15 in Part Two; and 20 in Part Three. Since the variation between formats 1 and 3 is considerable, differences will be traced chapter by chapter.

CHAPTER I. Same as in format 3.

CHAPTER II. In place of an output index and an output map there is (a) an index of production responsibilities, (b) a production responsibility tree, (c) an index of management responsibilities, and (d) a management network. These correspond to the output index and output map of format 3, and for purposes of data analysis were so treated, i.e., they were recoded using the data sets reported in format 3 profiles. In format 1, production responsibilities are treated much as products are treated in format 3, and management responsibilities are treated much as events and conditions are treated in format 3. The distinction management and production responsibilities, however, are carried into Chapters III and IV of format 1, causing two chapters in the profile to be devoted to work requirement data (such data are consolidated in Chapter III in format 3). As is the case in format 2 profiles, the language of output index and map, and the language of output structure, function, character, and level does not exist.

CHAPTER III. Entitled DETAILS ON EACH PRODUCTION RESPONSIBILITY, this chapter presents the data on standards, tasks, and enablers only for products pertinent to the contractual obligations of the project. The chapter also contains the recapped interviewee statements (in format 3 profiles they appear as an Appendix), as well as the category frequency data that are based upon these statements.

CHAPTER IV. Entitled DETAILS ON EACH MANAGEMENT RESPONSIBILITY, the chapter simply repeats the format of Chapter III.

CHAPTER V. Equivalent to Chapter IV in format 3.

CHAPTER VI. Equivalent to Chapter V in format 3.

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[5] Subsequent to the preparation of format 2 profiles, production and management "products" were reclassified into products, events, and conditions. Two purposes were served by this reclassification: (a) it eased the strain of what had come to be recognized as a forced classification; and (b) it enabled the data reported in these profiles to be used in cross-project analyses. The recoded data are reported in supplementary tables that accompany each format 2 profile.

CHAPTER VII. Equivalent to Chapter VI in format 3.[6]

Notes on Reading Output Maps

The output map found in each of the profiles contains a wealth of information about the outputs of the project under investigation. In order to extract all the information that a map contains it is essential that the rules guiding the construction of a map be understood.

The Purpose of the Map

The purpose of the output map is to present as simply and as clearly as possible the interrelationships that exist between the various outputs of a project. The desired effect of reading an output map is a "picture" of the project being discussed in terms of the dependency relationships among the outputs the project seeks to achieve.

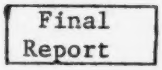
The Elements in a Map

Figure 4 contains an illustrative output map. A number of elements can be identified within it: solid line boxes; labels; code symbols; horizontal lines; vertical lines; brackets; dotted lines; dotted line boxes; and vertical (long and short dash) lines. Each of these elements contributes to the total information contained in a map. The following paragraphs identify the information presented by each element.

Solid line boxes

Each solid line box represents a specific output that the project is seeking to achieve. If the box stands alone (is not connected to any other box by a line) one of two conditions exists: (a) the output is considered to have value, but is not related to any other output, or (b) the output index did not contain output identifications that allowed other outputs to be linked to it.

Labels



Within each box there is a label which is the descriptor of the output represented. The labels found in the box are the same ones used to describe a particular output throughout the profile.

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[6] Profile 14 was a transition profile, and is peculiar in that it incorporates the language of the profile 1 format but the organization of profile 2 and 3 formats.

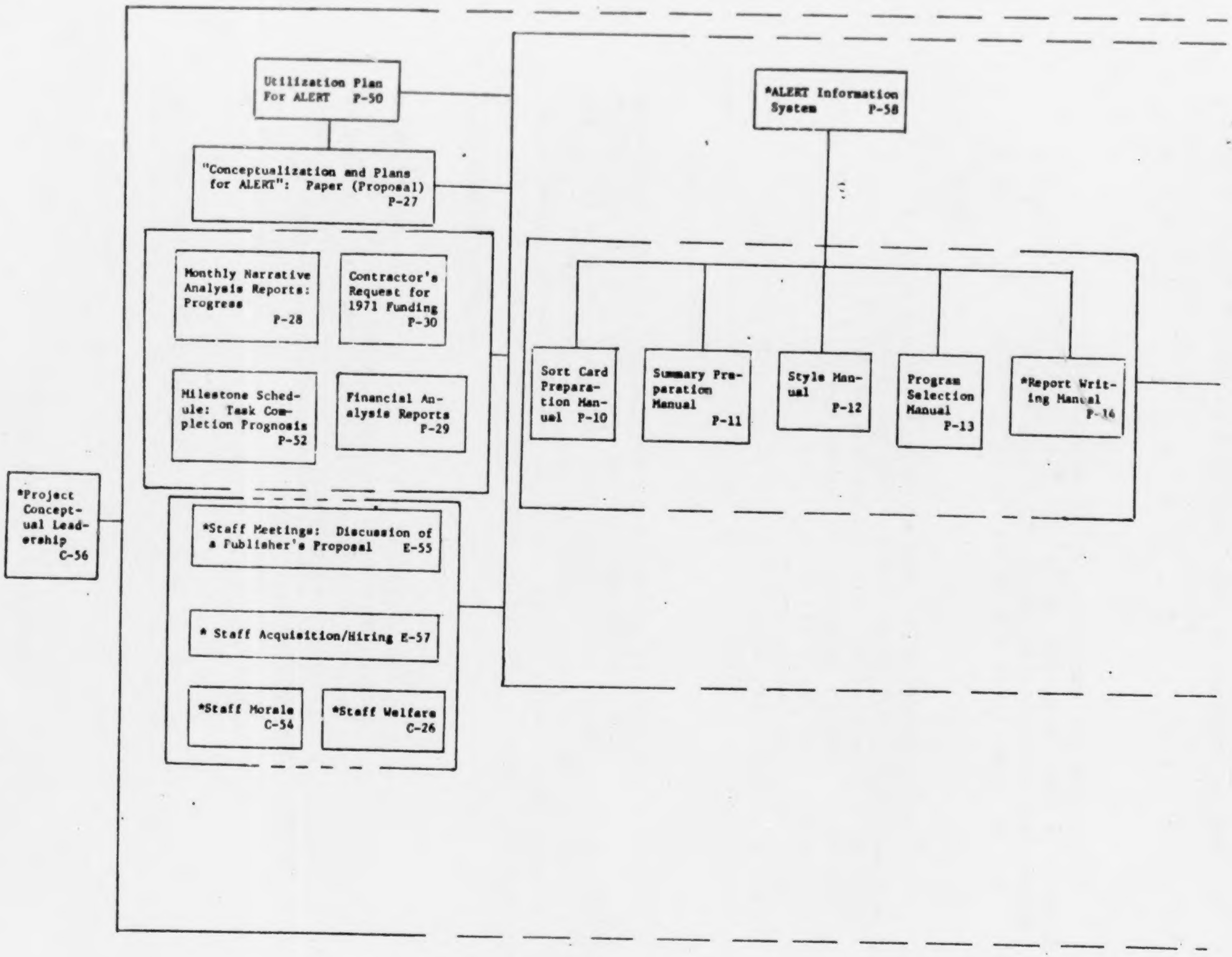
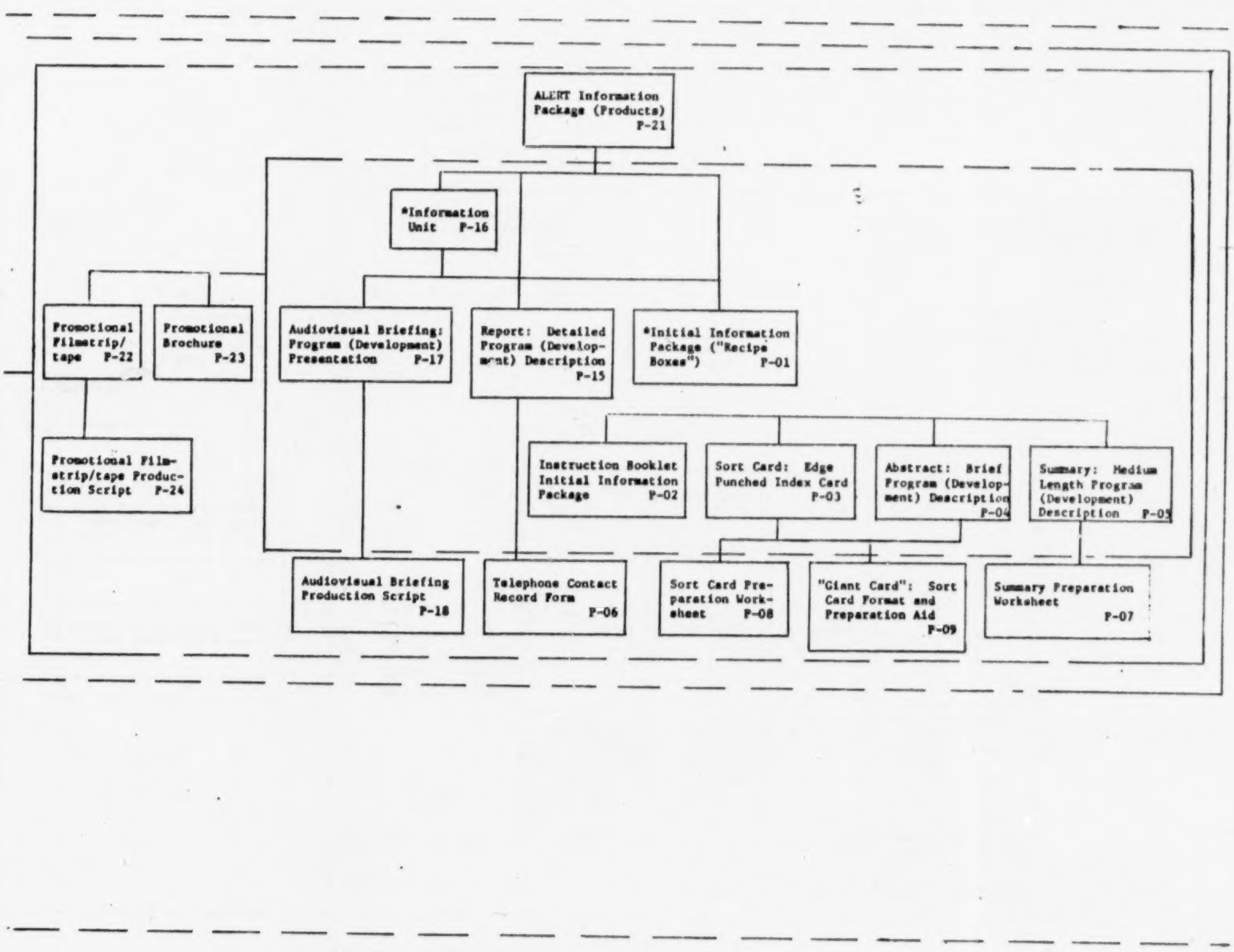

*Project Conceptual Leadership C-56
Utilization Plan For ALERT P-50
"Conceptualization and Plans for ALERT": Paper (Proposal) P-27
Monthly Narrative Analysis Reports: Progress P-28
Contractor's Request for 1971 Funding P-30
Milestone Schedule: Task Completion Prognosis P-52
Financial Analysis Reports P-29
*Staff Meetings: Discussion of a Publisher's Proposal E-55
* Staff Acquisition/Hiring E-57
*Staff Morale C-54
*Staff Welfare C-26
*ALERT Information System P-58
Sort Card Preparation Manual P-10
Summary Preparation Manual P-11
Style Manual P-12
Program Selection Manual P-13
*Report Writing Manual P-16

FIG. 4. An illustrative output map (overall project management and technology development).


ALERT Information Package (Products) P-21
*Information Unit P-16
Promotional Filmstrip/tape P-22
Promotional Brochure P-23
Audiovisual Briefing: Program (Development) Presentation P-17
Report: Detailed Program (Development) Description P-15
*Initial Information Package ("Recipe Boxes") P-01
Promotional Filmstrip/tape Production Script P-24
Instruction Booklet Initial Information Package P-02
Sort Card: Edge Punched Index Card P-03
Abstract: Brief Program (Development) Description P-04
Summary: Medium Length Program (Development) Description P-05
Audiovisual Briefing Production Script P-18
Telephone Contact Record Form P-06
Sort Card Preparation Worksheet P-08
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Summary Preparation Worksheet P-07

FIG. 4. Continued (information products development).

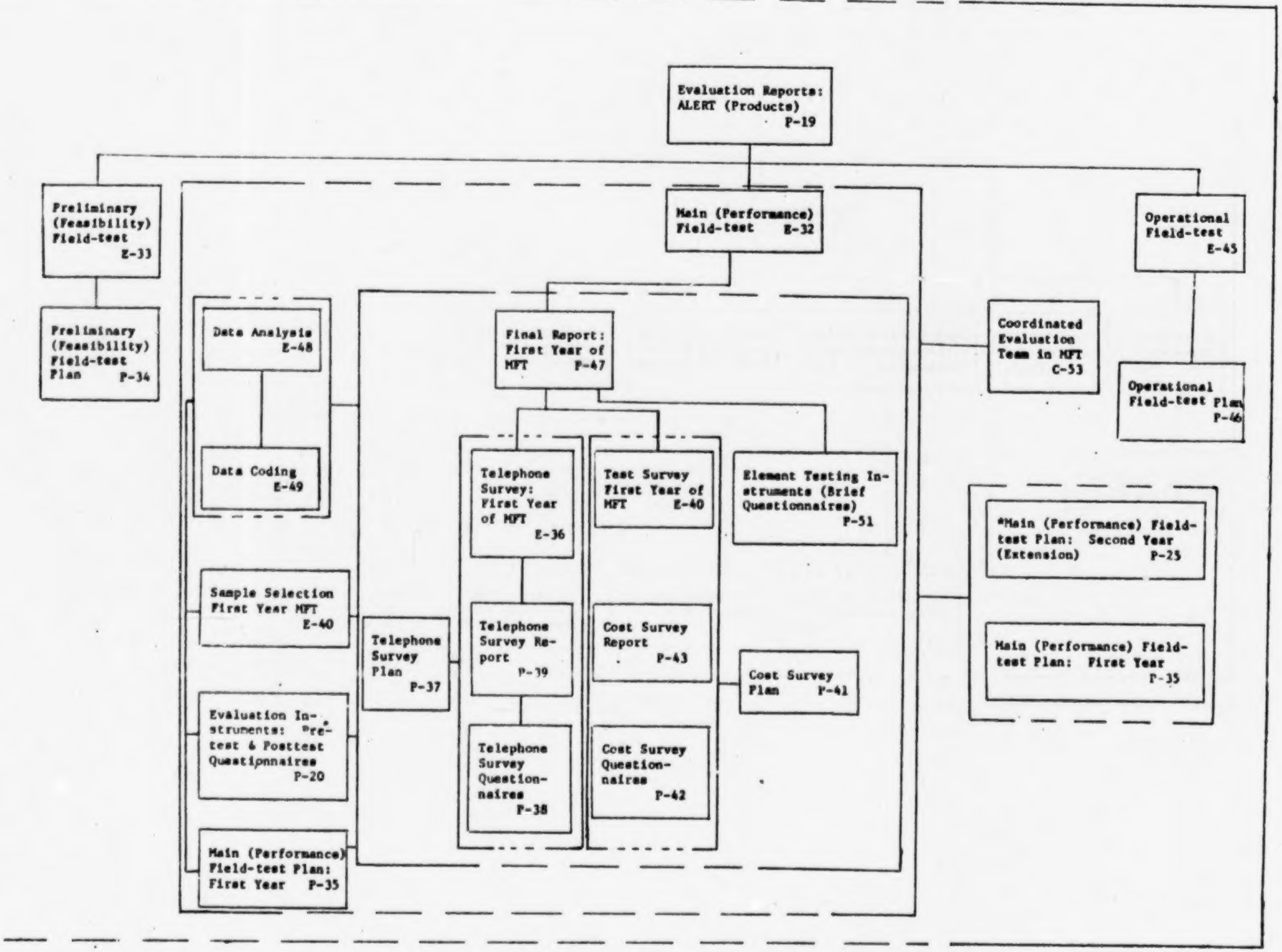
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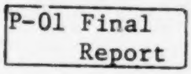
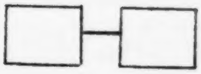
FIG. 4. Concluded (field-test evaluation of information products)

Coded symbol



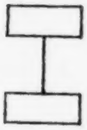
Each box contains, along with the label, a coded symbol. Each symbol is composed of a letter which identifies the structure of the output (P-product, E-event, C-condition), and a 2-digit numeral which identifies the output sequentially with respect to the other outputs in the same profile. Code numbers are the same throughout the profile.

Horizontal lines



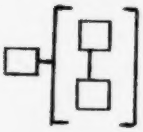
Horizontal lines between boxes indicate that the outputs so connected have side-effect relationships, that is, the production of one influences the other, and vice versa.

Vertical lines



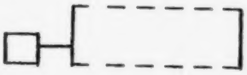
Vertical lines between boxes indicate that the upper output is dependent on the lower. Until the lower output is completed the upper one cannot be completed. In the total map, boxes connected by vertical lines are hierarchically arranged, those at the top of the map being dependent upon all those below.

Brackets



Boxes enclosed by brackets represent outputs which are influenced by, but not dependent on the output represented by the box linked horizontally to the bracket(s).

Dotted lines



Dotted lines connecting two brackets are used to indicate outputs that are influenced by another output when the outputs encompassed by a bracket area are large in number, or when influence is carried across more than one page of the map.

Dotted line boxes

Dotted line boxes represent those outputs which are either generated outside the project, but influence it, or are outputs generated by the project as a function of other outputs but have not been indexed by project staff.

Vertical (long and short dash) lines

When more than one page is needed to display an output map, vertical lines (long and short dash) are used on the right of the first page and the left of the second page to indicate the point at which the two pages coincide.

Under unusual circumstances some outputs may appear more than once in a map. This results when they are related to other outputs in different ways, i.e., dependent on one set but influenced by another. When it is impossible to display both the relationships by one placement, outputs are repeated.

Once the purpose of an output map is understood and the various elements within it are defined, the reader should be able to extract a great deal of information from a careful analysis of a map. It should be made clear, however, that an output map does not attempt to display time relationships as do other process charts such as PERT. An output map focuses on the dependency relationships existing between outputs, independent of the factor of time.

GLOSSARY OF COMMON PROFILE TERMS

This glossary contains definitions of terms used frequently in the profiles. Asterisks identify terms that were used in the early forms of the profiles. These terms, no longer in use, are identified with a single asterisk to indicate their appearance in profile format 1 and a double asterisk to indicate their appearance in profile format 2. When terms are used in a definition that are themselves defined in the glossary, they appear in capital letters.

ADOPTION. A circumstance in which KNOWLEDGE, INFORMATION, and/or TECHNOLOGY is utilized.

CHARACTER OF OUTPUT. See Output Character.

COMPONENT OUTPUT. An outcome of work effort that constitutes an element of, or an approximation to, a FOCAL OUTPUT.

CONDITION. An outcome of work effort that creates a desired circumstance expected to endure over the life of a project, or as a result of it.

CONTEXT. See Project Context.

DEVELOPMENT. A problem-solving strategy designed to produce reliable technology, that is, procedures, materials, hardware, and organizational frameworks that have a known degree of success in bringing about a particular outcome or in performing a defined operation; also used to designate the focus of projects (see Project Focus) and the focus of outputs (see Output Focus).

DIFFUSION. A problem-solving strategy designed to bring about the implementation of generalizable knowledge, a reliable technology, or trustworthy information (as used here diffusion incorporates both the concepts of DISSEMINATION and ADOPTION); also used to designate the focus of projects (see Project Focus) and the focus of outputs (see Output Focus).

DISSEMINATION. A circumstance in which KNOWLEDGE, INFORMATION, and/or TECHNOLOGY is distributed to a targeted population.

EDUCATIONAL RDD&E. A coordinated set of problem-solving strategies designed to produce outputs that can be judged as to their quality and their contribution to the solution of educational problems.

ENABLER. KNOWLEDGES, SKILLS, and SENSITIVITIES needed to produce a particular output.

ENVIRONMENTAL MANAGEMENT RESPONSIBILITY.* Responsibilities which, when carried out, result in outcomes that enhance or facilitate the environment in which a project operates. (Subsequently, only the outputs of these responsibilities were analyzed.)

EVALUATION. A problem-solving strategy designed to produce trustworthy information regarding a phenomenon which occurs in a context or environment over which the user expects to exercise influence or about which he expects to make decisions; also used to designate the focus of projects (see Project Focus) and the focus of outputs (see Output Focus).

EVENT. An outcome of work effort that results in the occurrence of an observable transaction or set of behaviors.

FACILITATING OUTPUT. An outcome of work effort that supports the generation of FOCAL or COMPONENT OUTPUTS, but is not in itself a part of such outputs.

FOCAL OUTPUT. An outcome of work effort expected by contractual obligation to emerge from a project.

FOCUS. See Project Focus and Output Focus.

FUNCTION. See Output Function.

IMPLEMENTATION. A classification given an output of DIFFUSION, i.e., an instance of the ADOPTION and UTILIZATION of KNOWLEDGE, INFORMATION, and/or TECHNOLOGY; the objective of DIFFUSION.

INFORMATION. A classification given an output of EVALUATION, i.e., an instance of reliable information about a given phenomenon within a context over which a user expects to exercise influence or about which he expects to make decisions; the objective of EVALUATION.

KNOWLEDGE (AS ENABLER). A classification given an ENABLER that identifies it as a fact, principle, or generalization, and that can stand the test of empirical verification; also, any circumstance that can be shown to exist.

KNOWLEDGE (AS OUTPUT). A classification given an output of RESEARCH, i.e., an instance of established fact, principle, etc. that is generalizable and that can stand the test of empirical verification; the objective of RESEARCH.

LEVEL OF OUTPUT. See Output Level.

MANAGEMENT FUNCTION. A classification given an output that orchestrates the resources (time, personnel, materials, space, information) available to a project for the realization of the outcomes expected from it; also a report of that orchestration.

MANAGEMENT NETWORK (also MANAGEMENT RESPONSIBILITIES NETWORK).* A hierarchical ordering that graphically illustrates the functional relationships between MANAGEMENT PRODUCTS and RESPONSIBILITIES within a project. (Subsequently incorporated within output maps.)

MANAGEMENT PRODUCT.** A classification given a product serving a MANAGEMENT RESPONSIBILITY. (Subsequently identified as a product serving a MANAGEMENT FUNCTION.)

MANAGEMENT RESPONSIBILITY.* See Environmental Management Responsibility and Production Management Responsibility.

MANAGEMENT RESPONSIBILITY INDEX.* A listing of the MANAGEMENT RESPONSIBILITIES within a project. (Subsequently incorporated within the OUTPUT INDEX.)

OUTPUT. An identifiable outcome of targeted work activity that contributes to the realization of project goals.

OUTPUT CHARACTER. The attributes of an output that mark it as an instance of KNOWLEDGE, TECHNOLOGY, IMPLEMENTATION, or INFORMATION.

OUTPUT FOCUS. The attributes of a FOCAL OUTPUT that mark it as an output of RESEARCH, DEVELOPMENT, DIFFUSION, or EVALUATION. (In Format 1 and 2 profiles, all outputs are classified in terms of an RDD or E focus.)

OUTPUT FUNCTION. The attributes of an output that mark it as serving a POLICY, MANAGEMENT, or PRODUCTION FUNCTION.

OUTPUT INDEX. An annotated listing of the outputs of a project.

OUTPUT LEVEL. The attributes of an output that identify its relationship to project goals as FOCAL, COMPONENT, or FACILITATING.

OUTPUT MAP. A graphic portrayal of the functional interdependencies among the outputs of a project.

OUTPUT STANDARD. A criterion applied to, or level of excellence expected of, an output; a criterion by which the adequacy of an output is judged.

POLICY FUNCTION. A classification given an output that establishes standards or guidelines for a project.

PROCESS/OPERATIONS STANDARDS. A criterion applied to, or level of excellence expected of, the processes/operations engaged in in producing an output; a criterion by which the adequacy of processes/operations are judged.

PRODUCT. A tangible or "hard" outcome of work effort, concrete in form, and transportable at a given point in time.

PRODUCTION FUNCTION. A classification given an output that is a part of the total fabrication effort of a project.

PRODUCTION MANAGEMENT RESPONSIBILITY.* Responsibilities which, when carried out, result in outcomes that enhance or facilitate the generation of products for which the project is responsible. (Subsequently, only the outputs of these responsibilities were analyzed.)

PRODUCT TREE or PRODUCTION RESPONSIBILITY TREE.* A graphic portrayal of the functional interdependencies among the products of a project (equivalent to an OUTPUT MAP, except it contains only PRODUCTS).

PROJECT. A formally recognized, funded and directed effort aimed at achieving one or more specified ends that have their definition in educational RESEARCH, DEVELOPMENT, DIFFUSION, and EVALUATION.

PROJECT COMPLEXITY. A project dimension defined in terms of level of funding and duration.

PROJECT CONTEXT. A project dimension defined in terms of institutional setting, e.g., schools, colleges and universities, publicly supported laboratories and R&D centers.

PROJECT FOCUS. A project dimension defined in terms of primary emphasis of work effort, i.e., RESEARCH, DEVELOPMENT, DIFFUSION, and EVALUATION.

RESEARCH. A problem-solving strategy designed to produce reliable KNOWLEDGE, that is, facts, principles, theories, and laws that are generalizable and that can stand the test of empirical verification; also used to designate the focus of projects (see Project Focus) and the focus of outputs (see Output Focus).

SENSITIVITY. A classification given an ENABLER that identifies it as an increment of awareness about an environment or factors operating in or upon an environment; also, attitudes and personality characteristics.

SKILL. A classification given an ENABLER that identifies it as an ability, proficiency or expertness in the exercise of an art, craft, or science.

STANDARD. See Output Standard and Process/Operations Standard.

STRUCTURE OF ENABLERS. A classification given ENABLERS that identifies them as KNOWLEDGES, SKILLS, or SENSITIVITIES.

STRUCTURE OF OUTPUTS. A classification given OUTPUTS that identifies them as PRODUCTS, EVENTS, or CONDITIONS.

STRUCTURE OF STANDARDS. A classification given STANDARDS that identifies them as OUTPUT STANDARDS or PROCESS/OPERATIONS STANDARDS.

TASK. A unit of work performed in producing a specified OUTPUT to a specified STANDARD.

TECHNOLOGY. A classification given an output of DEVELOPMENT, i.e., an instance of a plan, procedure or product that when applied can bring about a desired end with a known degree of reliability; the objective of DEVELOPMENT.

TREE. See Product Tree.

UTILIZATION. A circumstance in which KNOWLEDGE, INFORMATION, and/or TECHNOLOGY is employed in accomplishing a goal or end state.

CASE PROFILE NO. 9

Written by
Clark A. Smith

PROJECT TITLE: Tri-University Project on Behavioral Objectives in English, Grades 9-12

(BOE Project)

AN EDUCATIONAL DEVELOPMENT PROJECT CONCERNED WITH: Preparing and field testing a catalog of representative behavioral objectives in English, grades 9-13, together with suggested and exemplary procedures for evaluation, which will aid curriculum workers and teachers of English throughout the country in elaborating procedures for achieving desirable outcomes in English instruction.

A PROJECT OF:

University of Illinois (in cooperation with
Indiana University and Purdue University)
Department of English, 109 English Building
Urbana, Illinois 61801

This profile has been prepared according to

PROFILE FORMAT No. 3

Three profile formats are represented in this volume. The reader should refer to this number when making use of the reader's GUIDE to the profiles.

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Chapter I: Overview

The overview presents a brief synopsis of the Behavioral Objectives Exchange (BOE) Project. This is elaborated by a discussion of the objectives, rationale, and significance of the project and the context in which it operates.

Synopsis of the Project

Title: Tri-University Project on Behavioral Objectives in English, Grades 9-12.

Responsible Institution: University of Illinois (in cooperation with Indiana University and Purdue University).

Funding Source: Bureau of Research, U.S. Office of Education

Funding Duration: June 15, 1969 to August 15, 1971. (26 months)

Observation Date: May 1971.

Present Stage of Development: Final-Stage.

RDD&E Focus of Project: Educational development.

Expected Outcome: A catalog of representative performance objectives in English, grades 9-12.

Level of Funding and Duration: Medium. (level 4 of 7 levels)

Agency Setting: University.

Staff Summary (current)	Professional	Support
Total Full Time Equivalency (in man years):	2.31	4
Number of Personnel Assigned:	7	3

Professional Specialties of Staff (interviewees only): English, English education, mass media, educational psychology, journalism.

Objectives, Rationale, and Significance of the Project

The primary goal of this project is to prepare and make available to the profession, a field tested catalog of representative performance objectives in English for Grades 9-12. Several additional purposes are served by the underlying philosophy of the project and the procedures set for carrying the project out. These include:

1. Giving definition to a learner's mastery of the content of English, while simultaneously giving definition to that content itself.
2. Legitimizing the efforts of specialists in English focusing on the learner as a doer, through the inclusion of representatives from the behavioral sciences in project activities.
3. Identifying those outcome dimensions judged to be valid and important but for which immediate behaviors are not apparent. In so doing, maintaining a perspective on desirable outcomes and insights into their achievement.
4. Avoiding the risk of superficiality in behavioral statements by including a broad range of points of view held by persons participating in project activities.

A significant contribution intended by the catalog is the explication of a broad range of representative objectives which high school English teachers will generally accept as indicators of the achievement of various goals by learners. In effect, such explication gives a common frame of reference around which to examine the meaning of various abstract terms (e.g., appreciation) used in specifying broad classes of desirable outcomes.

The following is from the abstract in the project proposed:

Representatives of the University of Illinois, Indiana University, and Purdue University will work for one year with approximately 27 consultants in the preparation of a catalog of representative behavioral objectives for English in grades 9-12. (There will be two) will serve as major consultants; the others will represent selected ES-70 schools and various specialties in English and closely related fields. Before the first conference of consultants, the directors will review general aims for English teaching, attempt a categorization of them and prepare a sample set of write-ups of behavioral objectives. The first conference of consultants will draft statements of objectives, including evaluative procedures, in each category. After the conference, the directors will revise and edit the results and mail the draft to the consultants. At a second conference, after hearing comments from (the two major consultants), the consultants will revise and strengthen the draft. Then the directors will complete A Preliminary Catalog of Representative Behavioral Objectives in English, Grades 9-12.

During the second year the directors will field test the Preliminary Catalog in eight ES-70 schools and 16 other selected schools throughout the country. The results of the testing in various control and experimental situations, plus the reactions of a small group of carefully selected outside readers, will guide the directors in revising the Preliminary Catalog. The final document, to be made available to the profession, will be A Catalog of Representative Behavioral Objectives in English, Grades 9-12.

Context in Which the Project Operates

The context in which the Behavioral Objectives in English (BOE) Project operates is illustrated in Figure 1. Contractually the relationship is between the U.S. Office of Education (USOE) as the sole sponsor and the University of Illinois as the contracting institution. Operationally, the project is directed by two faculty members from the English departments of each of the three cooperating institutions, plus an educational psychologist from Purdue University.

Relationship to other agencies. Most of the Project Directors hold several positions of administrative responsibility, in addition to teaching responsibilities, within their respective institutions. In each instance within the cooperating institutions the English Departments (and the Purdue Education Department) agreed to cooperate with the project by making available .33 FTE[1] release time for each of the Directors. These departments, as well as any concerned research units within the Universities, reviewed the proposal and indicated no objection in principle to its implementation.

In addition to the Directors, consultants from the English discipline as well as the behavioral sciences were utilized in the primary generation activity. The list of consultants included public school personnel from eight ES-70 schools[2](one of these a parochial school) and University faculty from various schools, departments, or divisions of English, education, linguistics, speech and theatre, and humanities. Two major consultants with expertise in the behavioral sciences, specifically dealing with the explication of behavioral objectives, were employed as over-all consultants to the effort.

Field test sites selected consisted of eight ES-70 schools across the nation, ranging from the Northwest to Texas and to the Eastern Coast, eight non-ES-70 schools in close proximity to the ES-70 schools, and eight schools near the project's cooperating institutions. In effect, this permitted the testing of the catalog in schools having (a) formal commitment to innovation and change, (b) those not as formally committed, but geographically dispersed as to permit efficient visitation logistics, and (c) those not as formally committed but close at hand to facilitate planning and continuous monitoring considerations.

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[1] Full Time Equivalency

[2] A national consortium of public schools committed to systems design principles in the development of educational systems.

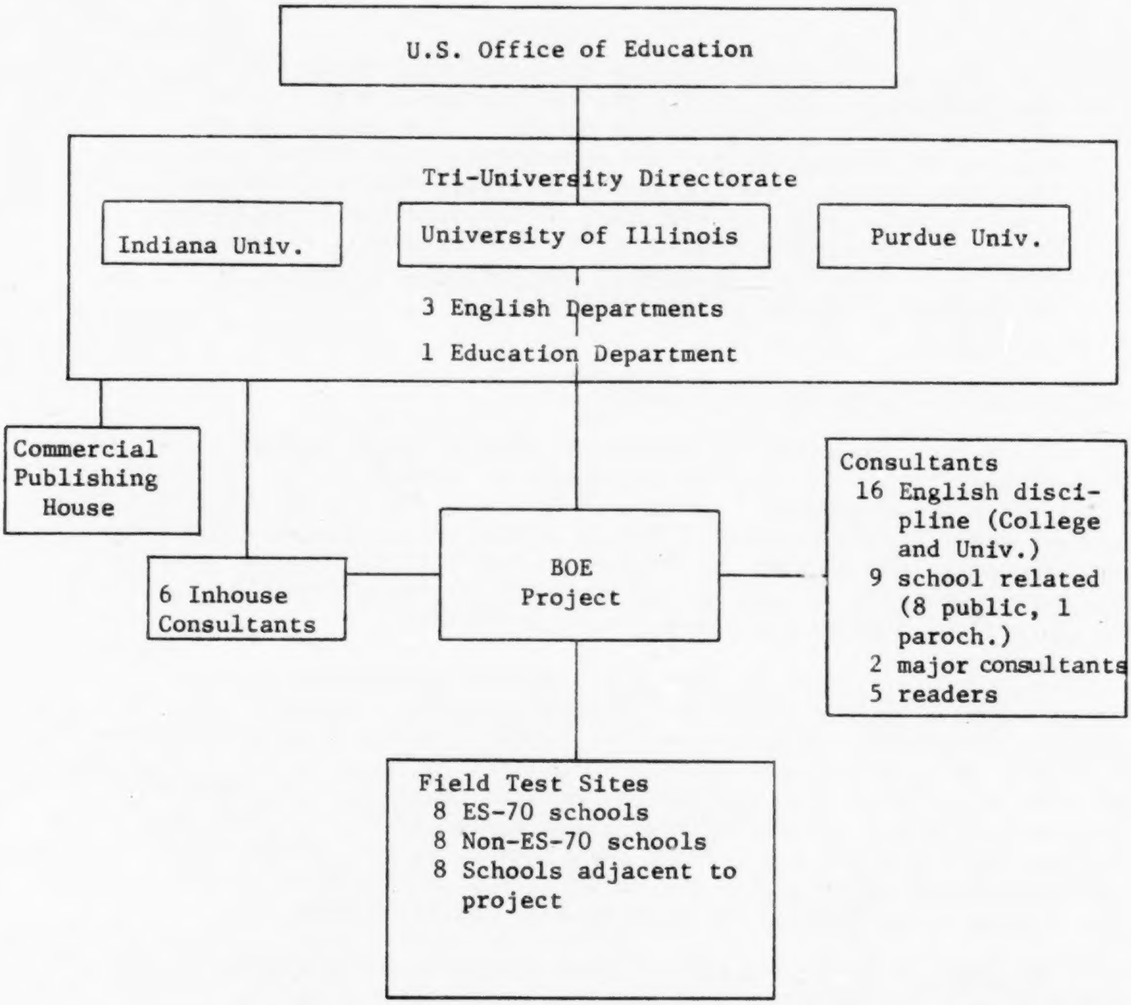
U.S. Office of Education
Tri-University Directorate
Indiana Univ.
University of Illinois
Purdue Univ.
3 English Departments
1 Education Department
Commercial Publishing House
6 Inhouse Consultants
BOE Project
Consultants
16 English discipline (College and Univ.)
9 school related (8 public, 1 paroch.)
2 major consultants
5 readers
Field Test Sites
8 ES-70 schools
8 Non-ES-70 schools
8 Schools adjacent to project

FIG. 1. Contextual map

Time lines. Project time lines were explicitly stated in the proposal and are summarized in Figure 2. The project remained essentially on schedule through the first year and to the point of observation in the second. One feature of the plan is the gap in scheduled activity immediately preceding each of the two work conferences. This made available to project staff time to take action on any unanticipated problems and insure proper preparation for the two critical events of the project. Differences of opinion which arose will be discussed in Chapter V. It is important to note, however, that prior planning left the project staff with a total of six to eight weeks of unscheduled time to be filled as the situation required.

Physical/environmental setting. One of the more unique characteristics of this project is the composition of its staff and directorship. The entire staff consists of the seven directors, plus some secretarial help in three separate locations. In one respect such an arrangement has the advantage of centralizing all project activities and responsibilities with the leadership. On the other hand, the nearly equal distribution of members of the directorship over a geographic area ranging in distance from approximately 100 to 150 miles created some difficulties, particularly

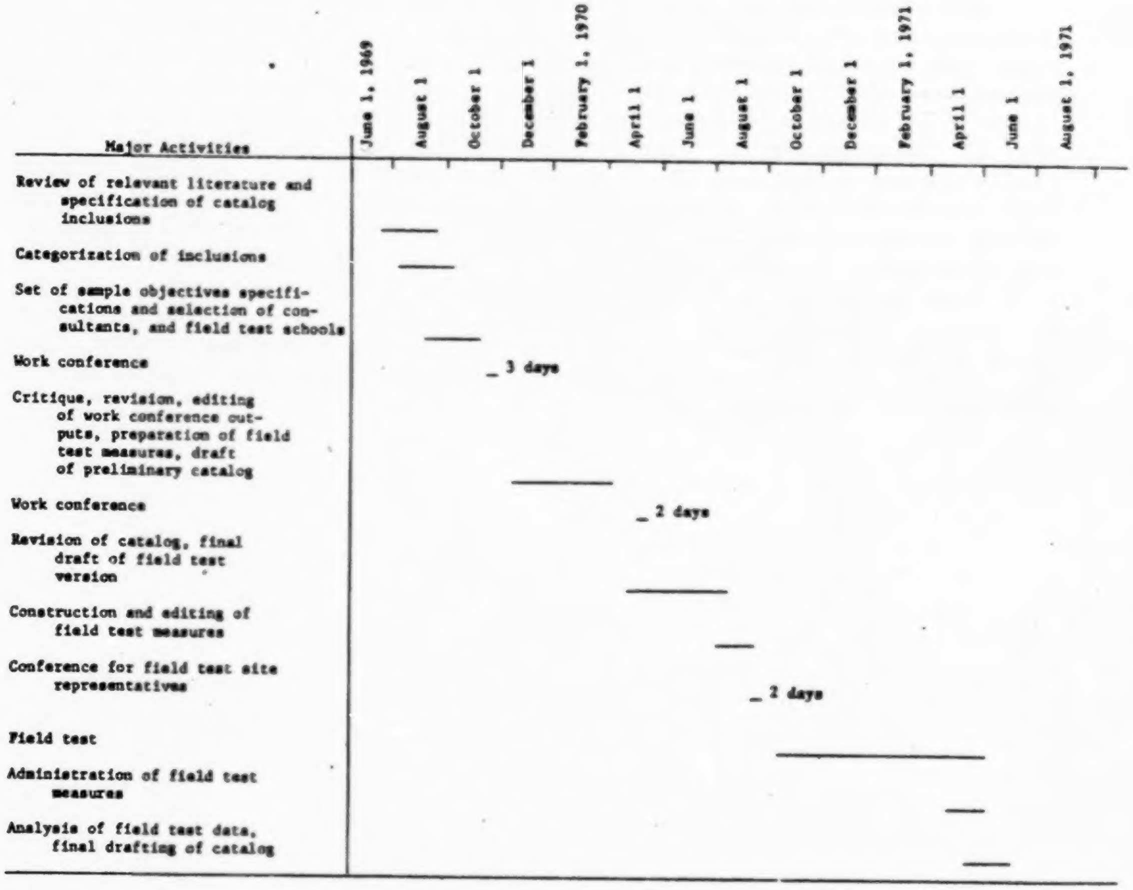

FIG. 2. Project time line chart for major activities.

with communication. Two mechanisms were employed to counter the effects of this distribution. The first was the use of the Wide Area Telephone System available to each of the directors through their institutions. Secondly, such telephone communications permitted early identification of the need for a collective gathering to handle project concerns or business. The location of these meetings was Crawfordsville, Indiana, thus reducing travelling distances to a range of 25 to approximately 80 miles.

Since the time for site visitation in the study of this project coincided with a time all Directors were in the University of Illinois area, the physical setting of the project can only be described as it pertains to the University of Illinois. Project offices are on the first floor of an older multifloor building located less than one block from the mall of the main campus. The building fronts on a heavily shaded, relatively narrow street and is of a size that permits small offices on each side of the building, running three or four small offices toward the rear, with a narrow hallway down the center. Essentially three office spaces are occupied by project personnel, two for the Illinois Directors and a full time secretary, and one which serves as a conference room. The impression of limited space in these areas is exaggerated by the inclusion of an extensive project library of references and materials within them. The two Project Directors do, however, maintain their own faculty offices elsewhere on the campus.

Chapter II: Parameters of the Project

Presentation of the parameters of the BOE Tri-University Project is focused on two dimensions, (a) the project structure in terms of the staffing pattern employed, and the roles and functions served, and (b) the outputs generated by the project and its personnel. Interpretive discussion, where applicable, is presented in subsequent chapters.

Project Structure

Staff structure. Immediate reference is made to Figure 1 in Chapter I. The project staff structure may be extrapolated simply from that figure as in Figure 3, which is an illustration of the organizational structure of the BOE Project.

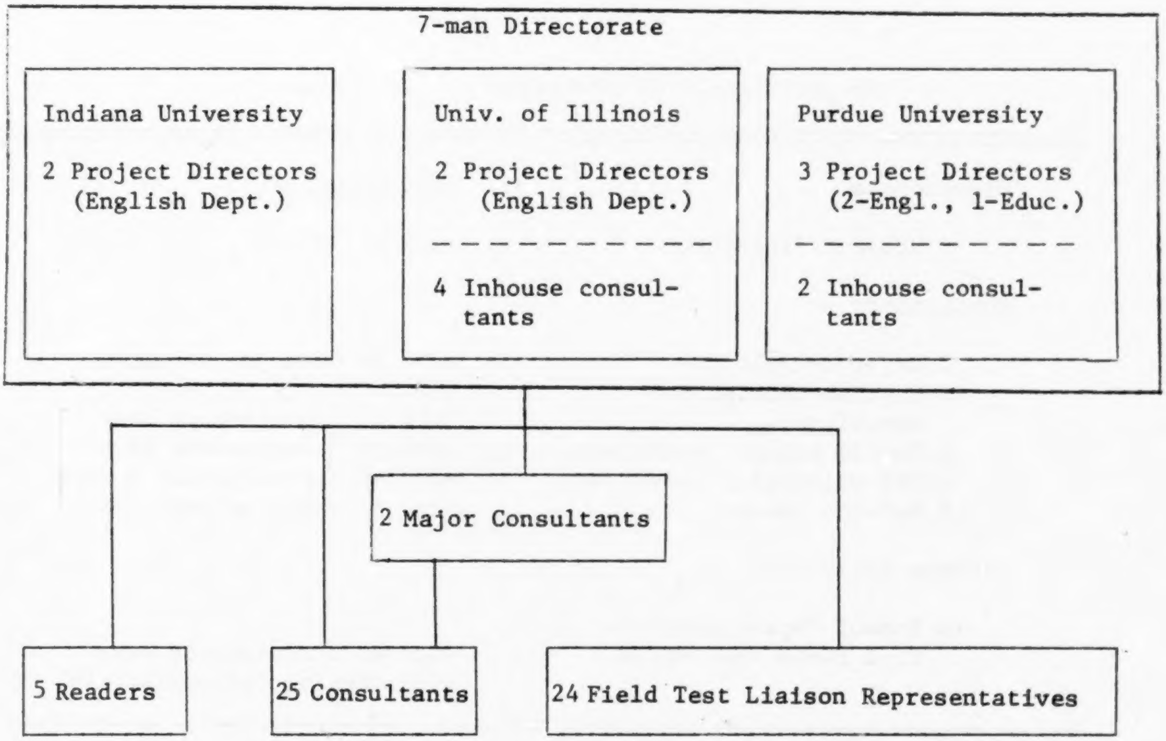
7-man Directorate
Indiana University
2 Project Directors (English Dept.)
Univ. of Illinois
2 Project Directors (English Dept.)
4 Inhouse consultants
Purdue University
3 Project Directors (2-Engl., 1-Educ.)
2 Inhouse consultants
2 Major Consultants
5 Readers
25 Consultants
24 Field Test Liaison Representatives

FIG. 3. Project organizational structure.

Operationally, responsibility for overall management and production activities resides within a seven man directorate, with guidance provided by two special consultants having the immediate ear of that directorate.

The primary production efforts in generation of the BOE catalog are assigned to a group of working consultants. Liaison personnel from the 24 field test sites relate to project activities just prior to execution of the field test of the preliminary catalog. They are primarily responsible for (a) facilitating the distribution of the catalog, (b) introducing its use to local faculty members, (c) the processing of questions and problems encountered in implementation, and (d) facilitating the completion and return of evaluation instruments. The outside readers have responsibility for the review and critique of various aspects of the preliminary catalog, with principal contribution made at the prototype stage (year one). Tri-University consultants, Colleagues of the Directors, are used for immediate and online consultation by each Director as he pursues the catalog section for which he has major responsibility. These consultants also act as participants in the working conferences.

Project roster. Table 1 elaborates the staff structure of the BOE Project by explicating the specific job titles of personnel and providing an estimate of FTE commitment of each to the project.

TABLE 1

Project Roster of BOE Staff by Job Titles

Directorate	Time commitment
7 Project directors	each at .33 FTE
Consultants	
2 Major consultants	each to react as required
16 English discipline consultants	each at 5 conference days
9 Public school consultants	each at 5 conference days
6 Tri-University consultants	each at approximately 5 days
5 Outside readers	each to react as required
Liaison personnel	
24 School representatives from field test sites	each at 2 conference days plus ongoing responsibility

Outputs Generated

Each of the outputs generated by any collective action of a group of people focusing on a common production effort has been conceptualized as falling into one of three classes: (a) tangible products which exist concretely at points in time; (b) events or processes which facilitate or are requisite to achieving the project objective; and (c) conditions or states of being which contribute to achieving project objectives. In each of these cases the output may also either facilitate, be a component of, or even be the focus of project objectives in and of themselves. In addition, each has a functional relationship to the project relative to production, management, or policy setting and can be classified as to Character, i.e., knowledge, technology, implementation, or information.

Index of outputs. To facilitate presentation of project outputs in a manner that communicates their relationships within the project, two modes are used: (a) output listed by level (focal, component, facilitating), and annotated in accordance with their structure (product, event, condition) and Function (policy setting, management, production), and (b) outputs mapped according to their dependencies. The code number preceding each annotation consists of two parts, a letter and a two-digit number. The letter simply indicates the structure of the output, i.e., P=product, E=event, and C=condition, while the number is used for storage identification purposes. Subsequent references to, or listings of, outputs in this profile are in accordance with these codes.

Focal Outputs:

Products serving a project management function:

P-02 Commercially Published Edition of Performance Objectives in English, Grades 9-12. An edition of the catalog, the publication of which has been negotiated with a known and established English text publishing firm for the purposes of broad dissemination and availability to school personnel.

P-03 Final Report. A report by project management which satisfies the obligation of the contract, declares the project completed, and declares that the conditions under which it was funded have been met.

Product serving a project production function:

P-01 Final Catalog of Performance Objectives in English, Grades 9-12. A catalog of objectives for high school English systematically derived from educational and discipline goals with implied and explicit measures of their achievement.

Component Outputs:

Products serving project production functions:

P-09 Preliminary Catalog. A prototype edition of the catalog of performance objectives in English to be used as the field test version.

P-10 Refined (conference 2) Approximation to Catalog. A collection of performance objectives created and/or refined and ordered by working conference consultants using previously defined objectives as beginning points.

P-13 First Draft of Objectives for Chapters to Catalog. A collection of performance objectives specific to the areas of concern in each chapter of the catalog. The organization of each chapter according to the outputs of an initial working conference has been the responsibility of one or more directors.

P-18 First Draft of Introduction to Catalog. An initial draft of an introduction to the catalog of performance objectives created by the initiating project investigator. It outlines the intents, purposes, and uses of the catalog and summarizes earlier dissenting issues arising on the project.

P-22 Initial Statement of Goal Areas for English. A first approximation of goal statements for education and the discipline of English created collectively by the Project Directors with the guidance of colleagues and major consultants.

Facilitating Outputs:

Product serving a project policy function:

P-14 Journal Report (Project Officer). A paper prepared by the sponsoring agency as an inclusion in an English discipline professional journal. It was designed to set forth a sponsor position with respect to the improvement of education and particularly with respect to instruction in English.

Products serving project management function:

P-05 User Questionnaires. A set of questionnaires developed by the project staff, designed to obtain information from teachers and students regarding their use of the preliminary catalog during the field test.

P-07 Interview Questionnaire (Guide to Interviewers). A schedule of the information to be collected by project staff during site visitations conducted toward the end of the field test period. This schedule was prepared by project staff prior to initiating the field test year of the project.

P-11 Modified Field Test Plan. A revised plan for field testing the catalog based upon recommendations coming from consultants during the first nine months of project operation.

P-19 Agenda for Initial Conference. An outline of the general activities to be undertaken by participants in the initial working conference.

P-23 Initial Field Test Plan. An initial field test plan approved for the project involving a variety of experimental and control groups and including highly specified procedures to be followed by experimental groups.

P-24 List of Field Test Sites. A list of approved and cooperating schools prepared and negotiated by the Project Directors. The list was generated by following criteria constraints as to geographic dispersion, district size, minority culture distribution, etc.

P-25 List of Consultants (Confirmed). A list of consultants identified, negotiated and approved by the Project Directors. The list was generated by following criteria constraints as to institutional affiliation, professional discipline, area of expertise, etc.

P-25 Proposal. The contractual paper upon which the project was funded and operationalized. It was generated through the cooperative effort of the six Directors affiliated with the English departments of the participating universities.

P-15 Journal Report of Project Progress (Project Director). A report prepared by the senior initiating Project Director expressing the view and progress of the project and published in an English discipline professional journal as one of several inclusions focusing on the application of performance objectives technology to the teaching of English.

P-04 Field Test Data from Use of Preliminary Catalog. The collection of data derived from field test use of the catalog, including responses to questionnaire, interview reports and record forms, and anecodotal comments made by teachers in the form of marginal notes in second copies of the catalog.

P-06 Teacher Annotated Catalog. One of two sets of catalogs given teachers, returned to project staff by them with annotated comments, critiques, and suggestions resulting from its use.

P-08 Interviewer Written Reports. A written report made by Project Directors on the basis of site visits to schools late in the field test period. The reports followed a somewhat standard format, with information obtained during each interview summarized in narrative form.

P-12 Video Tape Critique of First Draft of Performance Objectives. A video tape recording of one of the two major consultants critiquing the draft of the catalog prepared following the first working conference.

P-16 Dissenting Position Paper (Journal Article). A paper prepared by one of the consultants participating in the initial working conference. It set forth a dissent in relation to the intents and objectives of the project. The paper was one of several inclusions in an English discipline professional journal, focusing on application of performance objectives technology to the teaching of English.

P-17 Response to Dissenting Position Paper (Journal Article). A paper prepared by one of the Project Directors in response to a dissenting paper presented by one of the consultants. It was designed to place into project perspective the points of dissent and was published as one of several articles in an English discipline professional journal focusing on application of performance objectives technology to the teaching of English.

Products serving project production:

P-20 Outline of Catalog Goals, Objectives and its Organization: First Draft. A planning outline setting forth in operational terms the products to be produced for inclusion in the catalog. Created by the Project Directors as a framework around which the initial working conference could be organized.

P-21 Examples of Performance Objectives. An initial set of performance objectives created by the Project Directors to illustrate a manner in which performance objectives might be stated. They were designed as specific items around which participants in the initial work conference could react for the purpose of determining the desired level of objective specification to be used in the catalog.

Event serving a project management function:

E-30 Field Use of Preliminary Catalog. A field test activity requiring the use of the catalog in English instruction in 24 schools around the United States. The test was designed to permit natural, noncoercive use of the catalog by teachers, with data to be collected around the reasons for use or non-use.

Events serving project production functions:

E-27 Conference--Field Representatives. A conference held to familiarize representatives from each of the field test schools with the contents, intents, objectives, and uses of the catalog of performance objectives. The purpose of such familiarization was to facilitate distribution and use of the catalog in the various sites and to increase coordination in data-gathering efforts.

E-28 Initial Work Conference. (October, #1) A conference of the Project Directors and their consultants in which the purposes were, (a) to give substance to the initial goals and objectives suggested by the Directors, and (b) to begin the task of generating a broad range of performance objectives considered relevant in the teaching and learning of English.

E-29 Second Work Conference. (March, #2) A conference of the Project Directors and consultants in which the purpose was to react to the work of the Directors in assembling, organizing, and modifiying the outputs of the initial conference, and to continue the task of generating and framing a reasonably representative set of objectives for Grades 9-12.

Output map. Figure 4 illustrates the interdependencies of the various outputs of the BOE Project to the extent identified and understood by the site visitation team. It is probable that one could intuit and even verify the existence of a larger number of outputs depending on the level of detail useful in understanding the project and the nature of its outputs. In the present instance, the intent has been to illustrate those identified in a manner as free from the time dimension as possible so as to communicate the functional influence of the outputs on each other.

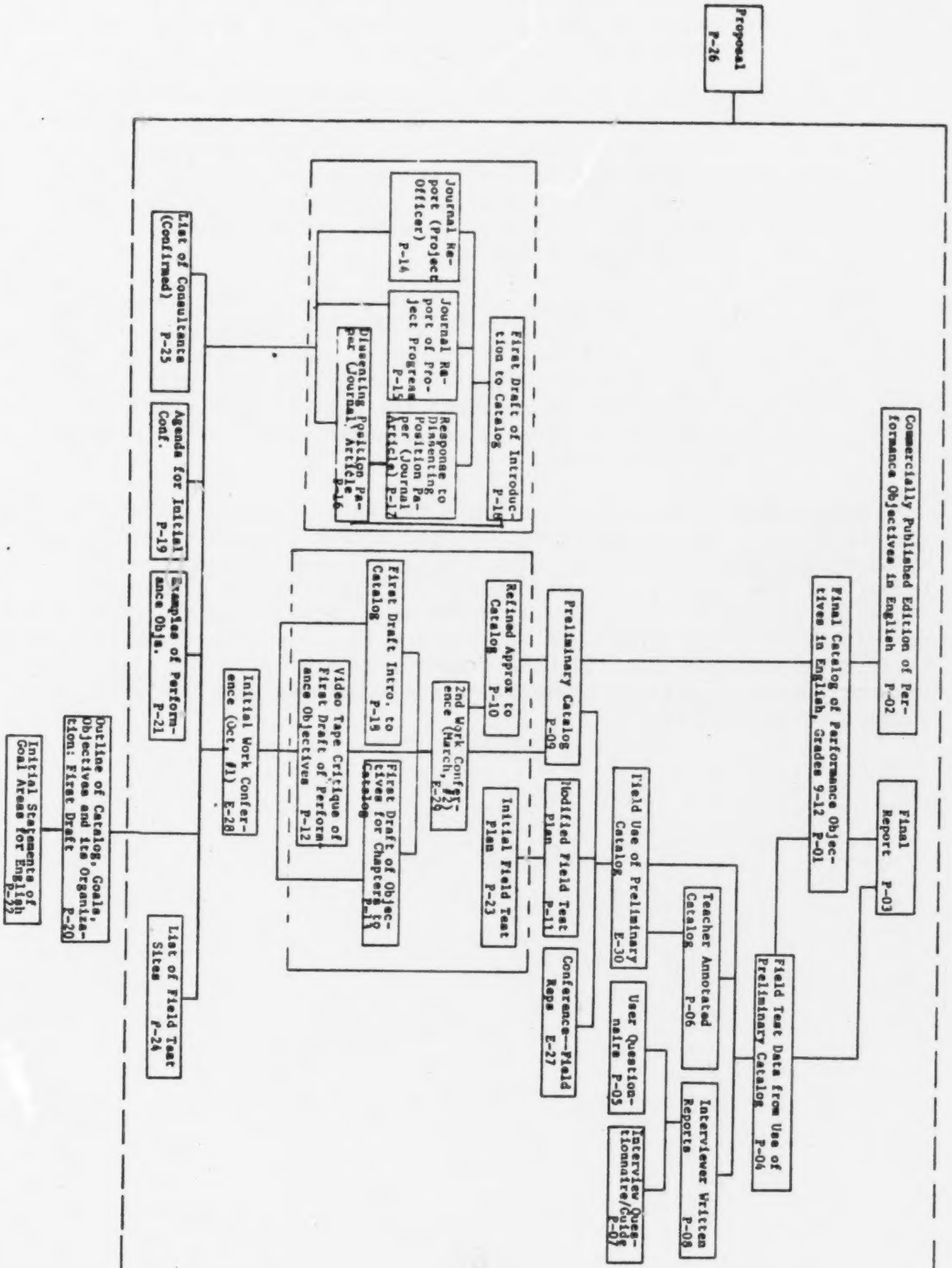
Proposal P-26
Commercially Published Edition of Performance Objectives in English P-02
Final Catalog of Performance Objectives in English, Grades 9-12 P-01
Final Report P-03
Field Test Data from Use of Preliminary Catalog P-04
Interviewer Written Reports P-08
Teacher Annotated Catalog P-06
Field Use of Preliminary Catalog E-30
User Questionnaire P-05
Interview Questionnaire/Guide P-07
Preliminary Catalog P-09
Modified Field Test Plan P-11
Conference—Field Reps E-27
Refined Approx to Catalog P-10
Initial Field Test Plan P-23
2nd Work Conference (March, #2) E-29
First Draft Intro. to Catalog P-18
First Draft of Objectives for Chapters in Catalog P-13
Video Tape Critique of First Draft of Performance Objectives P-12
Initial Work Conference (Oct. #1) E-28
First Draft of Introduction to Catalog P-16
Journal Report (Project Officer) P-14
Journal Report of Project Progress P-15
Response to Dissenting Position Paper (Journal Article) P-17
Dissenting Position Paper (Journal Article) P-16
List of Consultants (Confirmed) P-25
Agenda for Initial Conf. P-19
Examples of Performance Objs. P-21
Outline of Catalog, Goals, Objectives and its Organization: First Draft P-20
Initial Statements of Goal Areas for English P-22
List of Field Test Sites P-24

FIG. 4. Output map.

Chapter III: Summary of the Data

Data were gathered around specific outputs selected from those described in Chapter II. The interviews sought to elicit for each output to be analyzed the standards by which the satisfactory completion of the output is judged, the tasks required to generate an output meeting those standards, and the enablers (knowledges, skills, and sensitivities) which facilitate the performance of that set of tasks. Presented first is a summary discussion of each of the major category sets of data, i.e., standards, tasks, and enablers, followed by a series of tables which presents the frequencies with which the various categories of statements were made within each set.[3] To establish the parameters of the data gathered, the following outputs were selected for interview and further examination. (The identification numbers correspond to those used in all tables in this profile.)

P-01	Final Catalog of Performance Objectives in English, Grades 9-12
P-02	Commercially Published Edition of Performance Objectives in English, Grades 9-12
P-04	Field Test Data from Use of Preliminary Catalog
P-07	Interview Questionnaire (Guide to Interviewers)
P-09	Preliminary Catalog
P-17	Response to Dissenting Position Paper (Journal Article)
P-18	First Draft of Introduction to Catalog
P-20	Outline of Catalog Goals, Objectives and its Organization: First Draft
P-25	List of Consultants (Confirmed)
E-27	Conference, Field Representatives
E-28	Initial Work Conference (October, #1)

When one or more of these outputs are missing in a table, it simply means no data were collected in that category. It is important to reiterate at this point that the BOE Project staff consisted of seven Project Directors with no additional professional staff. Thus, interviewees were in a position to provide first hand data across both production and management functions.

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[3] If the reader is interested in the narrative statements of the interviewees (raw data), these can be found in the Appendix. To locate the narrative statement for any given category, first note the output and its identification number in the table. Second, note that each descriptive label within a given category has a distinct number or code. Turn to the Appendix and locate the output. Under the output locate the category label or heading (standard, task, or enabler) and pinpoint the number or numbers (depending on frequency cited) of the descriptive label which appeared in the table. The statement in the Appendix opposite this (these) number(s) is the original narrative statement being represented in the table.

Standards Held for Outputs

The statements elicited from interviewees were somewhat varied, but patterns emerge when one examines them in light of the range of standards cited. In terms of standards relating directly to output quality (Table 2), a broad range of standards categories were cited for two outputs (P-09 and P-17), while the rest were cited in only one or two categories. Completeness, utility, and acceptability of outputs, ranging across a variety of outputs, emerge as the prevailing themes. Frequencies relating to process standards held for operational matters around each output (Table 3), in some instances, have applicability only to the outputs in which the citation occurs. In summary, however, the concern indicated involves the utilization of the services of others, achieving favorable response from them, and producing a product that has utility and will be used. (See the Appendix for related raw data.)

Tasks Pertaining to Output Attainment

A total of 150 task statements were elicited from interviewees relative to 11 outputs. These statements divide almost equally between direct, producing-types and those generally thought of as management. Table 4 indicates the frequencies of citation across a broad range of task categories for each output. Significant clusterings appear around tasks relating to:

(a) clarifying problem addressed
(b) producing the output
(c) assessing the output quality
(d) procuring systems/services
(e) facilitating relationships.

Further examination of Table 4 will give the reader an impression of categories of tasks clustered within outputs, and the range of categories cited which are specific to each. The larger total frequency of citations for the preliminary catalog is a function of data being gathered from two interviewees. However, the distribution of citations for this and other outputs suggests attention to detail on major critical outputs of the project.

Enablers Pertaining to Output Attainment

Consideration of enablers is in relation to categories of knowledges, skills, and sensitivities. A brief discussion of the citations within each of these categories is called for, followed by a discussion of the interrelationships of the data within the general enabler set.

Knowledges. The most frequently cited knowledge factors involved in the BOE Project (Table 5) occurred in categories where one must examine the raw data for the most useful information (see Appendix). Briefly, knowledge requirements clustered around the nature of English and its teaching, and, in general, situational factors in an educational environment.

TABLE 2

Output Standards Cited for Each Output Analyzed

Project Outputs		Primary Categories of Standards for Outputs (Category code no. and label for coding set J-I)												
No.	Label	01 Completeness of content	04 Communication and clarity	05 Utility or value	07 Personal satisfaction/feeling	11 Appropriate design/content	12 Goal attainment	13 Acceptance by others (in proj)	16 Compares favorably	17 Internally consistent	22 Functions as planned	30 Lack of negative feedback	32 Created by reputable producer	Output Totals
P-01	Final Catalog										1			1
P-02	Commercially Published Edition												2	2
P-04	Field Test Data	1					1							2
P-07	Interview Questionnaire (Guide to Interviewers)			1										1
P-09	Preliminary Catalog	2	2	3			1	1	1	1				11
P-17	Response to Dissenting Position Paper (Journal Article)	2	1		1	1		1						6
P-18	First Draft of Introduction to Catalog							1						1
P-20	Outline of Catalog, Goals, Objectives and its Organization: First Draft			1								1		2
E-28	Initial Work Conference (Oct., #1)						2							2
Category Totals		5	3	5	1	1	4	3	1	1	1	1	2	28

TABLE 3

Process Standards Cited for Each Output Analyzed

Project Outputs		Primary Categories of Standards for Processes (Category code no. and label for coding set J-2)					
No.	Label	09 Outside contributions accepted	17 External enthusiasm evident	22 Feedback occurs	34 Impact of efforts favorable	36 Employment criteria met	Output Totals
P-01	Final Catalog		1		1		2
P-02	Commercially Published Edition					4	4
P-18	First Draft of Introduction to Catalog	2					2
P-24	List of Consultants (Confirmed)	1			1		2
E-27	Conference, Field Representatives			1	1		2
Category Totals		3	1	1	3	4	12

TABLE 4
Tasks Cited for Each Output Analyzed

Project Outputs NO. Label	01 Clarifying addressed problem	02 Formulating objectives	03 Designing the output	04 Producing the output	05 Collecting/processing data	06 Assessing the output quality	07 Diffusing the output	Total Production Tasks Cited	21 Procuring professional staff	22 Effecting accountability	23 Procuring systems/services	24 Effecting quality control	25 Maintaining job satisfaction	29 Facilitating relationships	30 Effecting info flow patterns	31 Diffusing info within project	Total Process Tasks Cited	Output Totals
	Clusters of tasks (Cluster code no. and label for coding set NO)																	
P-01 Final Catalog			1		1	7		9										9
P-02 Commercially Published Edition					1	1	1	3			6	4		1			11	14
P-04 Field Test Data				1	4	1		6		1				5			6	12
P-07 Interview Questionnaire (Guide to Interviewers)	1	1	3	2		1		8				1			1		2	10
P-09 Preliminary Catalog	2	2		6	2	7		19	1			4		7			12	31
P-17 Response to Dissent Paper	6			5		1		12				1					1	13
P-18 First Draft of Intro.	4			7				11						1			1	12
P-20 Outline of Catalog Goals, Objectives and its Organization--First Draft	1		2	1				4						3		2	5	9
P-25 List of Consultants									6								6	6
P-27 Conference--Field Reps.	3							2			9	1		4		2	16	18
P-28 Initial Work Conference	2							2	3		2	1	2	2		4	14	16
Cluster Totals	18	3	6	22	8	18	1	78	10	1	17	12	2	23	1	8	74	150

TABLE 5

Enabling Knowledges Cited for Each Output Analyzed

Project Outputs		Primary Categories of Enabling Knowledges (Category code no. and label for coding set 3-1)											
No.	Label	01 Standard school subjects	02 Subjects learned in courses	03 Subjects related to RDD&E	04 Technical/professional topics	06 Project variables: External	08 Project operation: Specific	09 Scheduling and organizing	18 Staff competencies/interests	23 Characteristics of target audience	24 Process implementation (proj)	27 Potential field setting	Output Totals
P-02	Commercially Published Edition										1	2	3
P-04	Field Test Data						2						2
P-07	Interview Questionnaire (Guide to Interviewers)						2						2
P-09	Preliminary Catalog	1	2			2				1			6
P-17	Response to Dissenting Position Paper (Journal Article)		2		2		1						5
P-18	First Draft of Introduction to Catalog			1		2							3
P-30	Outline of Catalog, Goals, Objectives, and its Organization--First Draft								1				1
P-25	List of Consultants								1				1
E-28	Initial Work Conference					1		1					2
Category Totals		1	4	1	2	5	5	1	2	1	1	2	25

Skills. Table 6 presents the frequencies with which the various skill categories were cited for the outputs analyzed. Skill enablers were mentioned for seven of the 11 outputs for which data was sought. These clustered around communication, both writing and interpersonal, and self-discipline factors. The total number of responses in this category was admittedly small, but a possible significance of the data will be considered further in discussion of the interrelatedness of the enabler citations.

Sensitivities. By far the greater number of enabler citations occurred in the sensitivity category. Loadings appear (Table 7) around the capabilities and limitations of others; sensitivity to the worth of the project, as well as to existing value systems which interact; and to potential communication barriers. The range and frequency of citations was highest in Output P-20, an output which constituted the first identifiable pulling together of the catalog.

Interrelationships among the enablers. Emphasis on knowledge factors, particularly in English, a broad range of sensitivity factors, and a relatively narrow set of skill factors seems consistent with the organizational and staffing structure of the project. To engage in producing a catalog of performance objectives in English one must have knowledge of the discipline, as did six of the seven Directors. In light of relatively limited staff expertise in framing performance-type objectives, there was a need for major consultant help from persons outside the discipline. This factor, coupled with opposing views within the discipline regarding the application of behavioral technology to the teaching of English, would seem to explain the emphasis on sensitivity.

Discussion of the Output Data

The character of the data gathered by the interview team appears consistent with several significant impressions gained from being on-site. Extended discussion of these impressions appears in Chapter V. For the present purpose, however, it is again noted that the project staff consisted of seven Project Directors. Differences in project responsibilities were around substantive catalog content, rather than management decision lines. Thus, the data reflect a view of a project through the eyes of a manager-producer. Additionally, unanticipated outputs occurred which focused public attention on the efforts of the project and resulted in the exercise of management responsibilities and tact that otherwise might not have occurred. (These were the papers involved in the dissent position.)

In terms of the relatedness of standards, tasks, and enablers, it appears that quality, utility, and acceptance were the standards sought for the catalog and the tasks seen as consistent with getting there. Appropriate and effective utilization of resources as a process standard seems in accord with efforts to clarify any problems and to effect a supportige field setting. With the exception of knowledge of the English discipline, most enablers appear on the affective side, with probable cause. It is possible that without maintaining a "tuned-in" posture and avoiding over-response to the various situations which arose, no amount of technical skill could have maintained the essential integrity of the project.

Enabling Skills Cited for Each Output Analyzed

Project Outputs No. Label	Primary Categories of Enabling Skills (Category code no. and labels for coding S-2) 01 Teaching	02 Facilitating people interactions	11 Disciplining self	14 Writing	24 Explicating goals/procedures	30 Adapting to situation/demands	35 Communicating clearly	39 Constructing measurement tools	Output Totals
P-01 Final Catalog	1	2							3
P-04 Field Test Data			2	1				1	4
P-07 Interview Questionnaire (Guide to Interviewers)							2		2
P-09 Preliminary Catalog				1	1	1	1		4
P-17 Response to Dissenting Position Paper (Journal)				1			1		2
P-18 First Draft Introduction			1	1					2
P-20 Outline of Catalog Goals, Objectives, and Organization						1			1
Category Totals	1	2	3	4	1	2	4	1	18

TABLE 7

Enabling Sensitivities Cited for Each Output Analyzed

Project Outputs		Primary Categories of Enabling Sensitivities (Category code no. and label for coding S-3)																					
No.	Label	01 Values of self and others	02 Capabilities and limitations	03 Needs of self and others	05 Context of subject matter	06 Worth in disciplines/methods	08 Worth in objectives	11 Awareness of method	13 Language barriers	16 Existing value systems	18 Potential conflict of interest	22 Responses of target audiences	24 Sources of error	25 Individual differences	26 Recognition of data needs	29 Willingness to experiment	30 Response sets of tgt audiences	31 Nature/scope of output	34 Willingness to take guidance	38 Emerging directions	47 Willingness to work as needed	48 Common sense	Output Totals
P-01	Final Catalog							1		4		1						1			1		8
P-04	Field Test Data														1								1
P-07	Interview Questionnaire (Guide to Interviewers)									1	1		1				1						4
P-09	Preliminary Catalog			1	1				1							1			1				5
P-17	Response to Dissent Paper					1		1	2								1						5
P-18	First Draft of Intro.								1	1		1						2		1			6
P-20	Outline of Catalog Goals, Objectives, and its Organization--First Draft					3	1	2								1			1		1		9
P-25	List of Consultants		1											1								1	3
P-27	Conference--Field Reps.		1							3													4
P-28	Initial Work Conference	1	2																				3
Category Totals		1	4	1	1	4	1	4	4	9	1	2	1	1	1	2	2	3	2	1	2	1	48

Chapter IV: Supplementary Data

Additional data with respect to this site visit comes from a questionnaire technique as well as from orderings of all the outputs identified in accordance with various categories in which they were classified. The sections to follow include: (a) classifications of the output characteristics, (b) summary of staff background, (c) summary of position requirements and support systems, (d) summary of the significance of various general categories of work, (e) summary of project funding, (f) discussion of supplementary data.

Classifications of Output Characteristics

Outputs may be categorized in terms of a number of variables. Among them are: (a) Structure (product, event, or condition), (b) Function (policy setting, management, or production), (c) Level (focal, component, or facilitating), (d) Character (knowledge, technology, implementation, or information), and (e) Stage of completion. These five schema are represented in Table 8 for each project output identified, with frequencies summarized for each category.

Summary of Staff Backgrounds

Personnel data were obtained from six of the seven Project Directors. Of these, three hold doctoral degrees and three hold master's degrees. Major areas of specialization include four specializing in English/writing, one in journalism, and one in education/teaching. All respondents are members of the National Council of Teachers of English. Three have 4-8 publications, while the others have over 16 publications each (one includes 12 books and over 100 articles and reviews).

In terms of work experience, the Project Directors reflected years of experience in educational RDD&E ranging from 3 to 25, with 0 to 11 of these years reported as engaged in directing such efforts. College or university teaching experience ranged from 3 to 35 years while experience in public schools varies from 2 to 18 years.

The most frequently cited aspect of professional training considered relevant to this project related to training in English and education. One respondent felt that research courses taken in an educational psychology program were most relevant. Work experiences in English curriculum studies and the current project were the kinds of experiences considered most relevant.

TABLE 8

Classifications of Output Characteristics

Project Outputs		Output Characteristic[a]																		
		Structure			Function			Level			Character (Products only)				Completion Stage					
No.	Label	p	e	c	ps	m	p	f_1	c	f_2	k	t	i_1	i_2	1	2	3	4	5	6
P-01	Final Catalog of Performance Objectives in English, Grades 9-12	X					X	X				X						X		
P-02	Commercially Published Edition of Performance Objectives in English, Grades 9-12	X				X		X					X					X		
P-03	Final Report	X				X		X					X						X	
*P-04	Field Test Data from Use of Preliminary Catalog	X				X				X				X			X			
P-05	User Questionnaires	X				X				X		X				X				
P-06	Teacher Annotated Catalogs	X				X				X				X			X			
*P-07	Interview Questionnaire (Guide to Interviewers)	X				X				X		X				X				
P-08	Interviewer Written Reports	X				X				X				X			X			
*P-09	Preliminary Catalog	X					X		X			X				X				
P-10	Refined (Conference 2) Approximation to Catalog	X					X		X			X			X					
P-11	Modified Field Test Plan	X				X				X		X			X					
P-12	Video Tape Critique of First Draft of Performance Objectives	X				X				X				X	X					
P-13	First Draft of Objectives for Chapters to Catalog	X					X		X			X			X					
P-14	Journal Report (Project Officer)	X			X					X			X		X					
P-15	Journal Report of Project Progress (Project Director)	X				X				X			X		X					
P-16	Dissenting Position Paper (Journal Articles)	X				X				X				X	X					
*P-17	Response to Dissenting Position Paper (Journal Articles)	X				X				X				X	X					
*P-18	First Draft of Introduction to Catalog	X					X		X			X			X					
P-19	Agenda for Initial Conference	X				X				X		X			X					
*P-20	Outline of Catalog, Goals, Objectives and its Organization: First Draft	X					X			X		X			X					
P-21	Examples of Performance Objectives	X					X			X		X			X					
P-22	Initial Statement of Goal Areas for English	X					X		X			X			X					
P-23	Initial Field Test Plan	X				X				X		X			X					
P-24	List of Field Test Sites	X				X				X		X				X				
*P-25	List of Consultants (Confirmed)	X				X				X		X			X					
P-26	Proposal	X				X				X		X			X					
*E-27	Conference, Field Representatives		X			X				X					X					
*E-28	Initial Work Conference (October, #1)		X				X			X					X					
E-29	2nd Work Conference (March, #2)		X				X			X					X					
E-30	Field Use of Preliminary Catalog		X			X				X								X		
Classification Frequencies		26	4	0	1	19	10	3	5	22	0	16	4	6	19	4	3	3	1	0

a The specific output characteristics are identified as follows:

Structure

p - product
e - event
c - condition

Function

ps - policy setting
m - management
p - production

Level

f_1 - focal
c - component
f_2 - facilitating

Character

k - knowledge
t - technology
i_1 - implementation
i_2 - information

Completion Stage

1 - completed over one year ago
2 - completed 3 to 12 months ago
3 - completed within last 3 mos.
4 - currently in progress
5 - not yet underway
6 - on going (continuous)

Summary of Position Requirements and Support Systems

Of the various aspects of training and work experience backgrounds of the project staff, there was consensus on relatively few with respect to their importance as requisites. Knowledge and skill, coming from both formal training and work experience, in the content and teaching of English was considered essential by all. To a somewhat lesser degree, a sense of educational psychology and psychology of learning was considered important. In terms of number of years of training and related work experience, responses were as varied as academic backgrounds.

By and large, manpower and other material resources were considered by project personnel to be adequate. Time lines and financial resources, on the other hand, were considered by most to be "a bit tight." In spite of this limitation there was general satisfaction that sufficient project time was provided for professional presentations and for professional perusal of literature.

Significance of Various Categories of Work

Table 9 reflects the frequencies with which the Project Directors ranked nine general categories of work across eight levels of significance. The scale used for the ranking and shown in the table is as follows:

0. Definitely not a part of my project activity, does not apply.
1. Under unusual circumstances may be a minor part of my work.
2.
3.
4. A substantial part of my work.
5.
6.
7. A most significant part of my work.

The table reflects concurrences on significance and common responsibilities in relation to the writing task, perhaps the single most essential of the project. However, the balance of the table, when taken in conjunction with factors noted onsite by the interview team, indicated each Director undertook greater responsibilities for some general categories of tasks than did others. While project management decisions were generally made by the group as a commonly shared responsibility, individual Directors did assume various initiating and leadership roles for discrete tasks, with production or consensus support coming from the rest.

TABLE 9

General Activity Significance

General Activities	Levels of Significance							
	0	1	2	3	4	5	6	7
Reading					3			3
Designing/planning project procedures				1	3		1	1
Developing research tools, data instruments		3	1		1	1		
Collecting project data					5	1		
Analyzing data		2			3	1		
Writing						1		5
Supervising/coordinating	3			1	3			2
Teaching or training	3			2	1			
Meeting/consulting/advsg				1	1			4
Totals	6	5	1	5	20	4	1	15

Summary of Project Funding

The Tri-University BOE Project is a two year project funded totally by the U.S. Office of Education. Allocations for each of the two years were as follows:

June 15, 1969 - June 15, 1970	$125,000
June 15, 1970 - June 15, 1971	$125,000
Project Total	$250,000

Housing for the project with an estimated value of $14,400 was provided by each of the three universities. At the time of site visitation a two month extension of time, with no extension of cost, was granted the project to complete catalog preparation for publication and final reporting tasks. Extended terminal date for the project was scheduled for August 15, 1971.

Discussion of the Supplementary Data

Genrally, the supplementary data indicates a staff exceptionally well versed in the discipline they represent, i.e., English and its instruction. A good deal of experience was also represented in terms of RDD&E activities. Project staff is seen as having organized around equal directorate responsibility, but did divide tasks presumably along the lines of expertise or accessibility of the resources, etc.

Chapter V. Project Dynamics

The Tri-University BOE Project, in proposal terms, appears as a relatively straightforward developmental effort using consultants as the primary source of content input in building a product, and refining the product for publication. However, organizationally and operationally the project reflects several dimensions and features which set it apart from other projects described in this series; some of these have been alluded to in previous chapters of this profile. Worthy of extended discussion are: (a) the operation of the project staffing structure; (b) the issues raised; (c) content vs. technological foci; (d) implications of the dynamics in the evolution of the catalog.

Operation of the Project Staffing Structure

Consideration of project dynamics as influenced by the staffing patterns employed focuses on three structures, the Tri-University relationship, the director relationships, and consultancy factors.

Tri-University structure. The collaboration of the three universities in the design and conduct of this project had as its background the history of English departments pursuing, on national and regional scales, the improvement of instruction in reading and English related curricula. Each was reasonably acquainted with the interests and directions of efforts of the other. In terms of these directions and interest, the proposed effort was seen as filling one of many needs identified by each of the institutions, i.e., bringing clarity to the objectives one might use for English. While discussed more fully in the "issues" portion of this section, it must be noted that the same sense of project utility was not shared by all colleagues within each of the English departments. However, there was general consensus "in principle" among colleagues that a need existed and that the present effort could result in a useful product.

As a matter of administrative convenience, the University of Illinois was the contracting institution, paying the bills and monitoring expenditures of funds. In practice, federal funds for salaries of directorate personnel from the other two institutions were paid directly to those institutions for subsequent disbursement. Royalties subsequently accruing from the project are to be handled in like manner.

Relationships among the directors. The initial proposal was submitted under the formally declared directorship of six persons, two each from the three universities. Subsequent to submission of the proposal, an amendment was submitted which, among other revisions, added to the directing staff an educational psychologist from Purdue University. With a background of the principles of learning as they might apply to reading and audio-visual communication, the additional Director was perceived as possessing certain psychological and research skills

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needed by the project. As the project got underway, each of the Directors assumed leadership responsibilities for various content specific areas of the subject matter to be generated for the catalog of objectives in English. The actual division of such production labor was according to preference and/or areas of expertise and familiarity. Where overlap occurred by way of common concern or skill, such Directors as were involved became an interacting group in support of the Director assuming leadership for that particular section.

On the management side of operations there evolved further divisions of labor (the actual exercise of various responsibilities) to facilitate accomplishment of overall administrative arrangements, e.g., conference arrangements. These tasks were assumed primarily by personnel from the University of Illinois (the contracting institution). Beyond purely administrative matters, management concerns arose as a function of personnel operationally confronting issues inherent in the effort. Leadership on this matter evolved to the senior initiating officer from the University of Illinois who was seen as possessing the skills and sensitivities necessary for maintaining the integrity of the project and a sense of perspective among its participants.

The consultants. Three major levels of consultancy are apparent in the project. One level relates to the inhouse consultants identified in two of the participating institutions. These consultants participated in the work conferences conducted and were readily available to the Project Directors for consultation between conferences. The main consultant group was comprised, by design, of people from across the United States who were selected on the basis of contributions they could make to the work at hand. Public school representation was essentially confined to persons working in the settings to be used in the field test, particularly those settings selected from those participating in the ES-70 program. The ES-70 focus was in keeping with terms set forth in the "Request for Proposal." Finally, two consultants served as technical advisors to the project in terms of applying the technology of performance objectives to the content area. Somewhat diverse consultant backgrounds or opinions relative to the content area was sought, and to some extent was achieved. The outcome, given the above structures, set the stage for confrontation around "means" issues in designing English curricula which consumed significant portions of project energies.

The Issues Raised

Central to the issues raised was the appropriateness of specifiying performance objectives for a content area such as English. While it was intended that the first work conference direct attention to the generation of such objectives, the diversity of backgrounds and biases held by participants came into play regarding whether or not the assigned task was both appropriate and possible to accomplish in any meaningful sense.

Out of the conference came two significant outputs, an initial set of statements describing objectives for English (in crude and somewhat random form), and a dissenting position paper prepared by one of the consultants. The dissenting position paper presenting, essentially, the views being expressed that ran counter to project objectives. This paper prompted a subsequent response prepared by one of the Directors. Both of these papers, along with a project progress report prepared by the senior initiating officer and a position statement by the sponsor's monitor were subsequently published in an English professional journal.

While project staff had been aware of the tentativeness of colleague approval regarding behavioral objectives for English prior to the first conference, they became more acutely aware of it afterwards. Some of the side effects included a reticence on the part of some project staff members to discuss the project efforts with outside colleagues. In addition, at least one cluster of the main consultant group attending to the specific content of one of the chapters of the catalog continued diligent work on the material but declined the invitation to be listed as contributors to the catalog. This appeared to be as a result of the controversy which arose over whether behaviorally framed objectives are appropriate for a content area like English. In short, the professionals in English had come to a public standoff within the discipline, with the Tri-University BOE project as the backdrop. The effects of this on project staff are discussed in the final section of this chapter.

Content vs. Technological Foci

While it may be argued that a behavioral technology intrudes on a discipline historically treated as relating to the humanities (an area presumably impossible to reduce to behaviors in any "appropriate sense"), the project personnel were directed to manipulate the technology in keeping with the discipline. Admittedly the tool to be employed was central to the project intended, but one cannot say the tool or the directorate coerced efforts contrary to professional conscience. In fact, concerns expressed by those participants remaining (at least one, the author of the dissent paper, left the project) seemed more focused on what "people might think" rather than on any gross violation of principle. The application of the technology was conceded, in the dissenting paper, as "a helpful thing" in terms of an "exercise in clear thinking" for those tending to be more "fuzzy-headed" about what they are doing than are math or science teachers. Without disparaging either point of view in the least, it was observed by the interview team that there was at least a healthy exercise in clear thinking regarding the teaching of English. And just as the dissent points to the incommensurables surrounding the learning of a more taciturn student, the long range contributions of this exercise may never be fully understood. It is probable, however, that negative side effects will be minimal since the users of such products tend to shunt them to the shelf at the first sign of difficulty. Project staff gave evidence of understanding this phenomenon in their direct, open-ended effort to collect use-nonuse data. It was in this context that project staff persevered and the final shaping of the catalog neared completion.

Influence of Project Dynamics on Evolution of the Catalog

Early in the history of the project, even prior to actual funding, project staff were sensitive to the potential issues involved in the effort. To counter the fear that there might be a tendency to use the catalog in a manner that suggested all objectives must be behaviorally based, an early modification to the title was made with the addition of the word "representative" (behavioral objectives). The concept of the "open-endedness" of the catalog was introduced. As the project began operations and neared the conclusion of the first year, another title modification seemed indicated and was acted upon on the advice of the major consultants. To reduce the negative affect surrounding the catalog (and possibly as a function of liberties taken with the technology) the term "behavioral" was replaced with "performance."

In an effort to create objectives having a relatively obvious and direct relationship to traditionally abstract goal statements, the measures of objective achievement which are typically explicit in the pure behavioral objective form were permitted by staff to become more and more implicit. As a consequence many performance objectives were structured in which the criteria for judging their successful completion was left to the standards held by the individual teacher. It is possible that this adaptation of the technology "unhooked" many of the objectives writers and permitted, in fact, a more comprehensive coverage of the discipline than might otherwise have occurred.

Finally, in terms of catalog content, the issues raised and the adaptations of the technology employed gave additional structure to the section of the catalog that describes its purposes and use. The evaluation factor, the measurement unit to be used by teachers as acceptable indicators of objective achievement, is considered at length. A caveat is entered to the effect that the teacher must exercise discretion and skill in seeking out observationally the subtle indicators of acceptable change which marks the covertness of learning among so many students.

Perhaps the impact of the dynamics of the project was felt most heavily by the directorate. In a real sense the size of the directorate was probably fortunate in that the pressures of the project could be distributed beyond just one or two persons. By and large, the Directors were committed to responsible, quality completion of the project task, even though several had little background in the behavioral sciences, principles of learning, and, indeed, the technology of behavioral objectives. For those lacking such a background and/or a sense of confidence in supporting the effort, the first year represented a period of intensive personal study and evaluation of related literature. As the project moved through time and the technology became more suitably adapted to the present effort, a growing confidence in the viability of the concept and an increased awareness of its potentials occurred. The staff of six English professionals and one educational psychologist emerged in the project with a verbalized sense of the real contributory and complementary nature of other disciplines.

The obvious concern for the utility of the catalog, its favorable acceptance by peers, and the need for broadly based contributions from the field, as mentioned in Chapter III, takes on a new perspective in light of the dynamics in operation within the project. The challenge to management in channeling such interactions along productive lines and maintaining participant focus on the end goal was obviously difficult. That the challenge was met and the goal, for all practical purposes, reached, was attributed by the directorate, with complete unanimity, to the "inexhaustible" patience, tact, diplomacy, and sense of fair play displayed by the senior principal investigator.

Chapter VI: Implications for Training

Examination of the raw data on enablers in the Appendix provides a sense of the prerequisites for engaging in a project structured and organized along the lines of the BOE Project. Beyond the expected emphasis on content specific knowledges and sensitivities, the requisites read not unlike requisite data which might be collected from other projects. What is missing is an indication of the affect with which the requisites were stated and the level of significance given specific skills relative to the challenge presented the staff.

Several themes having relevance for the training task seemed to emerge from analysis of interview protocol and interview team impressions of this site. One instance is the realization on the part of project staff that the technology of behavioral objectives provides a tool to achieve certain ends, and that as a tool its utility depends upon its adaptability to the varying situations in which application is attempted. It seems appropriate, then, to suggest that training in such techniques emphasize not the technique itself, but the principles upon which it is based and the processes and conditions under which the tool, rather than the environment, might be shaped.

Another factor which comes to the surface in this project has to do with the cognitive development of skills in RDD&E and the degree to which those skills can be processed, translated, and generalized when working and communicating with naive colleagues. The specific content involved varies greatly, e.g., from questionnaire construction to management of dissent to maintenance of goal orientation with tact and diplomacy. One suggestion offered by a Director emphasized training which included placing the student on the receiving end of the service for which he is being trained. The intent of such training is to provide experiences in which the student might internalize, beyond the purely cognitive level, the meaning of that which he is being taught. For example, the principles of questionnaire construction might well be taught as basic mechanics, i.e., the tools for building the tool. However, before, during, and after such training the real emphasis should be on the nature of the crucial information that is being sought and the varying ways in which it is expressed.

There is a strong indication that training must include the building of general skills in appropriate problem identification, i.e., the ability to concisely isolate those problems which influence, shape, or are the foci of goal orientations. Further, it is indicated that once a problem is identified, the worker must have the capacities and characteristics which enable him to assume an actively passive role in the situation. Such a role implies that educational RDD&E efforts are, in fact, helping services which command a set or sets of useful tools, and that such services cannot be effectively rendered until members of the serving staff, as well as those being served, achieve mutual commitment to the goal and the implied means and degrees of freedom to deviate are agreed upon. By remaining actively passive in the situation, the worker receives and processes a broader range of information regarding the various problems and is able to more precisely place that information into a perspective which enables all concerned to address and resolve the real issues.

The relative lack of experience of the majority of the project directors in the area of technological expertise with regard to behavioral objectives appeared not to prove a handicap in the project. This factor seems to have been compensated for by the fact that all project staff had a clear understanding of the ultimate objective (the focal output, if you will) which guided them in decisions regarding consultants, content, work responsibilities, etc. This indicates an important conclusion with respect to training: i.e., if the goals of a project are clear to all staff, then the appropriate expertise can either be acquired by staff or brought in from outside to perform specific tasks essential to the successful accomplishment of those goals.

Appendix

Appendix: Listing of Output Standards, Tasks, and Enablers

The following is a list of standards, tasks, and enablers for outputs around which interviews were conducted. These statements were extracted from discussions with interviewees and were coded into their respective category sets. The selected code precedes the statement and indicates the following for:

STANDARDS

Code J:	Structure of Standards.
J-1	Standards against which outputs are judged. (output oriented)
J-2	Standards against which processes and/or operations are judged. (process oriented)
Code LM:	Primary Categories of Standards.

TASKS

Code NO:	Clusters of Tasks.

ENABLERS

Code S:	Structure of Enablers.
S-1	Knowledge.
S-2	Skill or ability to perform.
S-3	Sensitivity or awareness.
Code UV:	Primary Categories of Enablers - (knowledges, skills, or sensitivities).

The codes associated with these three categories (standards, tasks, enablers) are the same both here in the listing and as previously cited in Chapter III tables.

Each of the 11 analyzed outputs is cited below within a rectangular box. Listed under each are the interview statements relevant to that output.

P-01: Final Catalog of Performance Objectives in English, Grades 9-12

STANDARDS:

$\frac{J}{2}\ \frac{LM}{34}$ Students reflect positive attitudes toward literature in the process of accomplishing the performance objectives.

1	22	Teachers use and expand on the activities suggested by the performance objectives, (as planned).
2	17	The profession (English Education) ultimately judges the catalog to be a service rather than a disservice to students and the profession.

TASKS :

NO	
05	Review field test data (summarized questionnaire, catalog annotations, site visit reports, etc.).
03	Examine sequencing of performance objectives in light of available taxonomies of learning.
06	Revise chapter title (Reading and Literature) to reflect more directly that the contents are performance objectives (Responding to Literature).
06	Reorder objectives to suggest free-wheeling (student likes and dislikes) as the most appropriate beginning activities.
06	Reorder objectives to suggest analytical and critical response items as being at terminal or end points in the learners development.
06	Insure adequate numbers of "exposure" and "interpretation" items in catalog chapter to provide a basis for subsequent (cognitive) understanding of the contents of literature.
06	Provide for expanded suggestions for and uses of creative experiences (in learning about literature) e.g., scripting and performing.
06	Add contributions coming from teachers in relation to more current (or relevant) pieces of literature as the media for a given performance objective.
06	Check objectives against their ability to serve at least the 75% of the population having reasonably functional reading levels.

ENABLERS :

S	UV	
2	01	Experience in secondary school classrooms with a sustained and current contact with classroom.
2	02	Must be able to exercise tact.
2	02	Must be able to relate to people very well.
3	16	Must be somewhat free of academic preoccupation.
3	16	Must be polite.
3	47	Must have a sense of "team effort."
3	22	Must be sensitive to the impact of field test activities on the field test sites.
3	11	Sensitive to not "locking students in" (provide alternative response modes).
3	31	View the effort as one of providing resources for learning as opposed to resources for teaching.
3	16	(Sensitive to) behavioral objectives being alien to the discipline of English.
3	16	(Sensitive to) the English profession being threatened by behavioral objectives.

P-02: Commercially Published Edition of Performance Objectives in English, Grades 9-12

STANDARDS:

J	LM	
1	32	Publishing house selected is an older, better established publishing house.
1	32	Publishing house selected already has a reputation and is known by teachers.
2	36	Publishing house selected normally publishes English texts and related materials.
2	36	Publishing house selected normally publishes materials directed to high school students.
2	36	Publishing house selected normally publishes materials directed to high school teachers.
2	36	Publishing house selected has a large, successful, well staffed sales force.

TASKS:

NO	
05	Submit statement to OE in support of negotiated contract with publisher as appropriate.
06	Revise letter requesting a statement of publisher interest as directed by and/or incorporating OE suggestions.
07	Describe to potential publishers the project and kind of book that is expected to emerge.
23	Write a letter requesting a statement of interest in publishing the document directed to at least three publishers.
23	Submit to publisher selected a model, OE approved contract.
23	Work out with the publisher the problem of contracting in a manner different from the publisher's usual contract.
23	Obtain contract approval from authorities in the agency (university as contracting agency for the project).
23	Meet with project directors to consider publishing houses to be approached.
23	Consider the publishing houses that meet the criteria, standards set forth.
24	Obtain OE approval of the publishing houses from whom statements of interest will be sought.
24	Submit most favorable publisher interest response to OE for approval.
24	Submit a draft of letter requesting a statement of publisher interest to OE for approval.
24	Submit proposed contract negotiated with publisher to OE for approval.
29	Submit a copy of field test version of catalog to publisher for examination.

ENABLERS:

S	UV	
1	27	Knowledge of publishing houses having a reputation for publishing English texts and materials for high schools.
1	27	Knowledge of publishing sales forces, their size, scope, reputation and effectiveness.
1	24	Knowledge of OE regulations and procedures governing publication of OE supported project documents.

P-04: Field Test Data from Use of Preliminary Catalog

STANDARDS :

J	LM	
1	12	100% return of the questionnaire (required by the nature of the product and the field test).
1	01	Each of the questions--determined earlier and for which data was collected to answer--have been addressed.

TASKS :

NO	
29	Send questionnaire to liaison person at each field test site (school) as an example of what is to be sent to all teachers participating in the field test.
29	Send questionnaires to liaison person to distribute at the field test site to all teachers participating in the project.
29	Send out a reminder letter (two weeks after the initial marking of questionnaires for the teachers) explaining the need for this information.
29	Send out a second reminder letter with another set of questionnaires (one week after the first reminder letter).
29	Call the liaison person and earnestly request the questionnaire information be sent as soon as possible--this was for personnel in a particular school who had not responded to the questionnaire after the second reminder letter.
05	Record all marks and comments from all of the annotated catalogs.
05	Arrange catalog annotations in relation to each objective - so the author revising a specific objective may be made aware of all the reactions to that objective from those who annotated the catalog.
22	Adopt a "hands off" policy relative to teachers annotating the catalog--they were given no instructions as to how to annotate; they were merely invited to make annotations.
04	Assemble information from field-site interviews into a written report descriptive of some of the conditions under which the catalog was used.

05	Tally and assemble all information from the questionnaire by each question.
05	Assemble demographic information in general manner to indicate the breadth of the sample and school situations in which the catalog was tried out.
06	Edit data analysis report so that it will be more readable (understandable) for the intended audience.

ENABLERS:

S	UV	
1	08	Know what information is wanted from the data.
1	08	Know what questions are to be answered from the field test data/information.
2	39	Ability to develop the most direct and least biased method to elicit the information.
2	11	Resist the temptation to develop a new scale (or number of scales) for some situation-specific thing.
2	11	Resist the tendency to gather more data than serves the immediate specified purpose.
2	14	Ability to write (report) in a clear and unpretentious manner.
3	26	Realization that missing data (from people who have not responded to the request for information/data) is often the most important.

P-07: Interview Questionnaire (Guide to Interviewers)

STANDARDS:

J	LM	
1	05	Information from the interview (following the interview guide) will be useful for making decisions relative to the catalog revisions.

TASKS:

NO	
01	Determine the types of information which would be useful to revise/upgrade the catalog.
30	Determine sources of people that would provide the most relevant information in the school setting.
03	Consider how to elicit information without biasing the situation.
02	Consider the functions to be served by the interview situation.
04	Generate/develop a set of questions for the guide.

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04	Arrange questions (the order of) so that the initial questions are the most general and least "loaded".
24	Review the initially generated set of questions.
06	Modify questions to clarify them and make them less ambiguous.
03	Consider the language--terminology--in framing questions, i.e., avoid references to psychological terms that imply a behavioristic approach to psychology.
03	Consider the function of the interview guide--to serve as a suggested set of questions and not as a fixed entity.

ENABLERS:

S	UV	
1	08	Know the purpose of the interview.
1	08	Know what information is not on hand but would be needed and useful to revise the catalog.
2	35	Ability to phrase question in such a way that it isn't loaded and doesn't imply a value judgment.
2	35	Ability to phrase a question so that it does not imply that one answer is right and another is wrong.
3	24	Sensitive to the notion that an interview situation is open to all kinds of bias and that some sort of interview guide is necessary to insure that the interviewer elicits the prescribed kind of information rather than reacting to and pursuing a bias.
3	18	Sensitive to the possibility of defensive feelings on the part of public school personnel relative to university people and/or personnel involved with national projects.
3	16	Awareness of the issues and some of the hostilities relative to the notion of behavioral objectives from people working in the field of English.
3	30	Sensitive to the audience for whom the questionnaire is being developed.

P-09: Preliminary Catalog

STANDARDS:

J	LM	
1	16	Objectives compare favorably with other known documents or expressions in the literature.
1	05	Broad use of the catalog or its components occurs during field test.
1	13	Expression of consultant satisfaction with the objectives.

TASKS:

NO	
29	Get working consultants acquainted with each other in an initial working conference.
29	Explain to consultants in the initial conference why a nonverbal communication section to the catalog should be written.
29	Dramatize (an illustrative) set of nonverbal signals (associated with communication) to the consultants.
29	Elicit from the consultants other examples of nonverbal, communicating behaviors.
29	Engage consultants in formulating instructional goals relative to the area of nonverbal communication.
02	Participate in group effort at explicating instructional goals in the area of nonverbal communication.
04	Formulate and write out performance objectives for the area of instruction in nonverbal communication in collaboration with the consultants.
29	Prepare copies of goals and objectives drafted, to be given consultants at end of conference.
06	Refine the conference draft of objectives.
24	Send refined draft of objectives to consultants for further comment.
24	Elicit comments (in writing or by phone as necessary) from consultants regarding refined draft of objectives.
06	Write a second draft of objectives based on comments elicited from consultants.
29	Submit second draft of objectives to consultants for examination in preparation for a second conference.
24	Elicit "clean-up" responses from consultants meeting as a group (2nd conference).
06	On the basis of field test data, amplify and clarify objectives items.
06	Add or substitute suggested content materials to use with objectives to include contemporary works (cf. field test data).

ENABLERS:

S	UV	
1	01	Experience in the field of English.
2	14	Experience in writing and publishing.
2	30	An ability to be a generalist, to cross disciplines in coordinating sets of activities.
3	03	Sensitive to the need of consultants to have guidance during the conference.
3	29	Willingness to try many things to give direction to the effort and in achieving consensus.
3	34	Blind stupidity and a lot of fortitude.

P-17: Response to Dissenting Position Paper (Journal Article)

STANDARDS:

J	LM	
1	01	All the arguments or points selected to be answered or dealt with have been covered.
1	13	Directors are satisfied with the content (responses to the arguments) of the paper.
1	11	Response dealt with the arguments/points in the dissenting paper, i.e., it was focused and did not ramble beyond issues presented in the dissenting paper.
1	04	Response was readable and understandable by the audience (readers).
1	01	Responses/answers were complete--adequately supported and/or defined.
1	07	Author of the response to the dissenting paper was satisfied with his paper.

TASKS:

NO	
01	Read the dissenting paper.
01	Read and study behaviorist theories and practices.
01	Read most of the literature related to behavioral objectives.
01	Attempt to state our (collective) philosophy as it stood at that particular point in time.
01	Select the major arguments or issues expressed in dissenting paper.
04	Write a "gut level" response to the dissenting paper.
01	Determine which major points could be or should be answered--deal with the substantive, philosophical views relative to the use of behavioral objectives in the discipline of English.
04	Write the responsive paper in a questionning, exploratory style.
04	Respond directly to those selected issues raised by the author to the dissenting paper.
04	Attempt to respond in a more literary language as opposed to using scientific language; avoided behaviorist jargon.
24	Review and critique draft by all project staff.
04	Control the timing of the content of the paper.
06	Edit paper for length before it is published.

ENABLERS:

S	UV	
1	02	Knowledge of what a behavioral objective is.
1	04	Knowledge of behaviorist theory and practices.
1	04	Knowledge about various techniques in the behavioral sciences,

		which may be applicable (with perhaps some modification) to the field of English, which facilitate the generation of knowledge relative to the humanities and the teaching of the humanities.
1	02	Knowledge of the focus of a behaviorally phrased objective, i.e., the approach must be student centered.
1	08	Knowledge of exactly what was to be refuted--the author's arguments and not the author.
2	35	Ability to control the tone in which the paper is written.
2	14	Ability to write in a clear, cohesive, unified manner.
3	06	An understanding of the adaptive, but perhaps united, use of behavioral objectives in the field of English.
3	11	Sensitivity to the notion that teaching involves modifying behavior.
3	30	Awareness of the audience for which the paper is written.
3	13	Sensitivity to the effect the tone might have on the audience (readers).
3	13	Sensitivity to the effect the language in which the paper is written will have upon the audience.

P-18: First Draft of Introduction to Catalog

STANDARDS:

J	LM	
1	13	Critical responses received from consultants indicate that introductory comments about behavioral objectives are relevant.
2	09	Suggestions coming from consultants are constructive relative to use of the document as an introductory section to the catalog.
2	09	Constructive suggestions regarding individual items of behavioral objectives are forthcoming from consultants.

TASKS:

NO	
01	Review comments and criticisms raised by consultants at previous conference.
01	Read professional literature relative to behavioral objectives in English.
01	Consider opposing views within the National Council of Teachers of English (Professional organization) regarding behavioral objectives.
01	Assess (inductively) the reasons for opposition to specifying behavioral objectives in English.

04	Summarize the critical issues identified from different sources.
04	Draft summary pro and con statements for each issue identified.
04	Prepare duplication of dissenting position paper and the paper written in response to it.
04	State (write) the decisions made in relation to questions raised at the previous conference about target audience, format, etc.
04	Write overview of project to data.
04	Write summary of current considerations in further refinement of objectives.
04	Prepare duplicate drafts of objectives refined and/or generated following the previous work conference.
29	Send drafts of paper and appropriate sections of the objectives specified to the consultants prior to meeting.

ENABLERS:

S	UV	
1	06	Knowledge of the criticisms teachers direct toward behavioral objectives.
1	06	Knowledge of teacher experiences with behavioral objectives and the reactions to those experiences.
1	03	Knowledge of the historical development of behavioral objectives as applied to English.
2	14	Skill in conciseness and economy of words in writing.
2	11	Ability to be direct and honest.
3	22	Sensitive to what happens to teachers when forced to develop or utilize behavioral objectives.
3	38	Sensitive to increasing teacher awareness of behavioral objectives and their relevance.
3	16	Sensitive to the political climate in the various states and schools in relation to behavioral objectives.
3	31	Sensitive to fairness in presenting opposing points of view.
3	13	Awareness of the "purr" and "snarl" effects of words in biasing a presentation.
3	31	Sensitive to the length of a document (so as to fairly represent the views but not appear to beg the question).

P-20: Outline of Catalog, Goals, Objectives and its Organization: First Draft

STANDARDS:

J	LM	
1	05	A feeling of the Project Directors that no performance objectives are trivial.

1	30	Feedback from field test reflects minimum dissatisfaction with objective items.

TASKS:

NO.	
31	Provide time within the project to permit consultants to read the "pre-knowledge" material (while in conference).
31	Provide time for "getting the air cleared" (with consultants) following review of background material.
29	Obtain consensus from consultants about the nature of the background material and the tasks to be undertaken.
04	Write objectives based on ideas and inputs from consultants.
29	Provide consultants with background material on behavioral objectives.
29	Discuss with the consultants the issue of behavioral objectives in the humanities.
03	Distinguish between and organize separate sections (Chapters) for Language and Writing performance objectives.
01	Discuss with consultants possible translation of their (college and university based) material into high school framework.
03	With the consultants, reduce the knowledge of linguistics and a translation of it into. . :an applied form having meaning for high school.

ENABLERS:

S	UV	
1	18	Know the people you have asked to work.
2	30	Have the ability to take criticism.
3	34	Understanding that asking professionals for self-preparation prior to project sponsored activity is not likely to work.
3	29	Willingness to try to prove something in spite of criticism.
3	47	Willingness to sit down and write the objectives even though content consultants could not do it satisfactorily.
3	08	Possess a sense of the trivial in a content area.
3	06	Have a view of language as a very practical thing.
3	06	Have a view of "instruction" as a means to show people how to use the language.
3	06	Have a view that the knowledge base of language provides a means for eliciting other desired student performances.
3	11	A realization that much of language is generated through experience, e.g., subject-verb agreement.
3	11	A realization that the teaching of language rule by rule is not very successful.

P-25: List of Consultants (Confirmed)

STANDARDS :

J	LM	
2	09	(That ultimately) the project directors feel that no performance objectives generated are trivial.
2	34	(That ultimately) feedback from the field test reflects a "minimum" of dissatisfaction with performance items.

TASKS :

NO	
21	Specify what you want the consultants to do.
21	Very carefully select people to insure being able to get from them that which you expect to need.
21	Assure (by checking with them) that the people selected can, in fact, do the job.
21	Accommodate accessibility by selecting consultants close to area. (It may be a fallacy that geographic dispersion is prerequisite to achieving diversity of perspectives.)
21	Anticipate diversity of consultant opinion in advance (in-house) and specify position pertaining thereto.
21	Limit the selection of consultants to diversity of opinion on how a thing should be done rather than on what or whether.

ENABLERS:

S	UV	
1	18	Knowledge of the people you have asked to work.
3	48	(An attribute) of common sense.
3	02	Understanding that "eminence in the content field" does not necessarily mean that the person can do the job (of specifying performance objectives).
3	25	Recognition of varying degrees of commitment between project directorate and consultants.

P-27: Conference, Field Representative

STANDARDS:

J	LM	
2	34	Teachers of English in each field test site show evidence of having used the catalog.

2 22 Teachers of English in each site return annotated catalogs reflecting a critique of its content and utility.

TASKS:

NO	
01	Determine types of schools to be selected for catalog tryout.
01	Determine community sizes involved with schools (to be representative).
23	Obtain a complete list of ES-70 schools (from OE).
23	Determine geographical locations in the U.S. to be used as representative.
23	Select eight ES-70 schools to be approached for field test participation.
23	Write to Administrator of each ES-70 program requesting cooperation in field test.
23	Select eight ES-70 schools which qualify and meet sampling standards set.
23	Ask each ES-70 school administrator to select and elicit cooperation from another school in their area (non-ES-70) for the field test.
23	Identify and select schools local to the project institutions (8) to be used in field test.
23	Contact English Department heads of schools to elicit field test cooperation.
23	Participate in meetings, phone conversations with school administrators to answer questions and obtain administrative approval for use of school as a field test site.
24	Assess (unobtrusively) the conferees to identify the seemingly best informed, most articulate and imaginative to tell colleagues some of the ways which have occurred to them to use the catalog.
29	Describe project efforts to English Department heads.
29	Ask each school administrator to select a representative to attend an orientation conference on use of the catalog of performance objectives.
29	Direct conferees to read the catalog and prepare questions to be answered.
29	Specify the activities intended for the conferees to carry out when they return home.
31	Schedule facilities and agenda of events for field representative orientation conference.
31	Moderate small discussion groups directed to identifying various ways teachers might use the catalog.

ENABLERS:

S	UV	
3	02	Sensitivity in selecting conferees who could offer creative illustrative uses of the catalog to their colleagues.
3	16	An understanding that the leadership for the project must come from the professional discipline in order to obtain the cooperation of the professionals in the field.

3	16	The reputation which comes from having a publication on the teaching of high school English widely used in the U.S.
3	16	An awareness of the need to legitimize the efforts by having a directorship that ipso facto understands "the peculiar problems of English."

P-28: Initial Work Conference (October, #1)

STANDARDS:

J	LM	
1	12	First round of behaviorally stated objectives in the different areas/categories of English are generated.
1	12	First round of general goals within each area/category of English are generated.

TASKS:

NO	
01	Identify areas of English for which goals and objectives are to be generated.
29	Generate sample behavioral objectives for the identified areas/categories of English.
1	Generate a tentative list of people to serve as consultants at this conference.
21	Rank-order the list of consultants by preference within each area/category of English.
21	Invite (by mail) the consultants to the conference.
23	Select conference site.
23	Arrange with the site hotel/motel to have needed facilities available for the conference.
31	Draft the agenda for the conference.
24	Send draft to all the Directors for their review and critique.
29	Sent materials in advance of the conference to all of the consultants, e.g., samples of behaviorally stated objectives, Mager's "Preparing Instructional Objectives," an abstract of the project's proposal, etc.
01	Determine conference objectives or expectations.
31	Design the arrangement for small group work--determine which consultants will be grouped together and how they are to be grouped.
31	Reconvene as a group several times during the conference to discuss questions which are common among the various small groups
31	Work primarily in small groups (within an area/category of English) and individually to generate behaviorally stated objectives.

25 Provide a couple of social gatherings during the conference.
25 Meet (directors) on the second afternoon of the conference to "take stock" of the conference in general.

ENABLERS:

S	UV	
1	06	Know who the recognized authorities are in various areas within the field of English.
1	09	Know how to make arrangements for and at the conference site.
3	01	Sensitive to how authorities regard themselves--sensitive to their self concept.
3	02	Sensitive to how easily each consultant is able to work with other people.
3	02	Sensitive to the general attention or work span of most people--in planning a conference some allowance must be made for breaks in work session.

CASE PROFILE NO. 10

Written by

Norman H. Crowhurst

PROJECT TITLE: Providing Wide Ranging, Diversely Organized Pools of Instructional Objectives and Measures

(IOX Project)

AN EDUCATIONAL DEVELOPMENT PROJECT CONCERNED WITH: Creating and providing bases for others to create improved and more comprehensive objectives and measures.

A PROJECT OF:

Instructional Objectives Exchange
1019 Gayley
Westwood, California 90024

This profile has been prepared according to

PROFILE FORMAT No. 3

Three profile formats are represented in this volume.
The reader should refer to this number when making
use of the reader's GUIDE to the profiles.

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Chapter I: Overview

This overview presents a brief synopsis of the Instructional Objectives Exchange (IOX) Project as an introduction. This is elaborated by a discussion of the objectives, rationale, and significance of the project and the context in which it operates.

Synopsis of the Project

Title: Providing Wide Ranging, Diversely Organized Pools of Instructional Objectives and Measures.

Responsible Institution: University of California at Los Angles, Instructional Objectives Exchange.

Funding Source: U.S. Office of Education, National Center for Educational Research and Development.

Funding Duration: July 1969 to June 1971. (24 months)

Observation Date: April 1971.

Present Stage of Development: Final stage.

RDD&E Focus of Project: Educational development.

Expected Outcomes:

1. New catalogs of instructional objectives and measures.
2. Quality control procedures for such objectives measures.
3. More functional categorization schemes for objectives and measures.

Level of Funding and Duration: Medium-Low. (level 3 of 7 levels)

Agency Setting: University.

Setting of Primary Location of Work Effort: Instructional Objective Exchange offices.

Staff Summary: Three-man directorate.
6 - Research Associates.
1 - Clerical support staff.

Full Time Equivalency (FTE): On this project, assigning a meaningful FTE for personnel is inappropriate because of the way in which staff combine IOX activities with other assignments, and because of the additional support of IOX aside from this project, which has now been established as a nonprofit corporation.

Objectives, Rationale, and Significance of the Project

Objectives. The focal outputs ennumerated in the synopsis are intersecting rather than mutually independent. The first is the main tangible output of the project, to produce improved and more comprehensive objectives and measures of increased utility to ES '70 and other schools. The purpose of the second is to establish quality control to assure the operational validity of the objectives and measures generated, and to provide progressive improvement in them on the basis of this control. The third is to develop classification and synthesizing schemes for instructional objectives which will depart from those currently employed, thereby enabling the objectives to achieve more functional and precise operability.

Rationale. The original commitment of the Exchange was to solicit and collect objectives and measures, and to collate them into collections by subject area and grade level. This was based on the thinking that in today's harried, public school environment, teachers rarely have time to become generators of their own operationally stated objectives and the measures that go with them. However, it was believed that much good work was being done in relatively isolated instances. By collecting and sharing the outputs from this work, teachers would be able to select needed objectives, rather than having to generate their own, and thus derive the benefit of work in the field without unnecessary duplication of effort.

The original solicitation effort was less successful than anticipated, although the demand for the outputs thus collected was large and continues to grow. Examination of the materials collected showed inconsistencies that led in part to the generation of the objectives of this present project. Some objectives collected contained ambiguities, or in other ways lacked operational validity, and had to be screened out or modified to eliminate or reduce the defects. Also, while some subject areas and levels offered such an accumulation of objectives that the use of all of them would result in redundancy, there were other areas where there were gaps.

Objective one, therefore, is to take immediate steps (during the life of this project) to fill in the deficiencies and gaps that became evident from pursuit of the simple "exchange" notion. The Exchange was started as a "sharing" center and, in spite of these technical deficiencies, has proved successful in providing a source of objectives and measures not available before. An ever-increasing demand has continued to develop for the objectives provided by the Exchange.

The second objective in a sense pursues current concepts of objectives, providing a framework within which continued improvement may be generated by quality control. The major thrust of this effort is presently limited to established fields, such as reading, science, fundamentals of English usage, mathematics, social studies, foreign languages, and vocational specialties.

The third objective is based on a longer-range rationale. Current objectives and measures are classified by conventional subject and grade level and by topic within these areas for division or categorization. Several studies have progressively suggested that these conventional areas for specification and measurement are not truly indicative of the learning that occurs in the individual student, or of the effectiveness of instruction in producing such learning across a collection of students in a class. For this reason, the third objective is to examine the results of work in this area and to take first steps toward the development of new classification schema that may be more meaningful than the traditional variety.

Context in which the Project Operates

This project is being pursued by a close-knit team which appears to work well together and to interact in a way such that initial differences of input, due to difference in background, experience, or former conditioning, brings about reinforcement: a stronger end result than would be possible from a "sum of the parts." The work of producing the project's outputs is performed by individual members of the team, or small (two- or three-man) combinations of them.

If "project" is identified with the people who perform it, then "context in which it operates" would appear to refer to the physical surroundings in which they work as a team. This identification is somewhat inadequate to describe the actual context of this project. Pursuing this identification, the "context" would be the offices of the Instructional Objectives Exchange located just off the UCLA campus. This, it is true, is where personnel of this project were interviewed. But a more accurate description of the project context would be to say that the work goes on in project members' heads, wherever they may be at any given moment, that outputs take on tangible form by being committed to paper, and that the needs of team operation are met by their getting together from time to time at the above-mentioned offices.

Perhaps this viewpoint of context also links with the problem of specifying a precise staff FTE, although there are other reasons for that. The notion of a specified FTE does connote individuals allocating a certain amount of their time in well-defined "slots" of activity. This describes the way the real world operates on this project.

The parent agency, in some respects, can be considered to be the Instructional Objectives Exchange, which was initiated at the UCLA Center for the Study of Evaluation. This project was funded by the U.S. Office of Education (USOE) as a project of the Instructional Objectives Exchange, at the time part of the Graduate School of Education at UCLA. When the number of collections of objectives began to become ready for dissemination, the question of how they could best be made available to a larger audience was considered. The advisors at the Center considered this activity to be more a service than a research or development activity. For this reason, in April 1970, IOX (Instructional Objectives Exchange) moved out of the Center and became a nonprofit corporation.

The profit from the sales of the objective collections continued to be returned to the Center until July 1970, when a continuation of the project for its second year was granted. After that time, profits from the sale of the objective collections were returned to IOX. Funding for the project continued to be administered through the Graduate School of Education. In addition to these project funds, the newly-incorporated IOX began receiving funds from USOE Title III monies through 18 states. This came as a result of a solicited proposal to generate more collections of objectives, particularly in the attitudinal domain. The Bureau of Indian Affairs (BIA) also provided funds following a solicited proposal of parallel nature.

Figure 1 shows a somewhat simplified arrangement of these relationships. A further useful relationship for the project involves the teaching assignments of two of the 3-man directorate. They teach in the Product Research Training Program. Students in this program receive training that is also useful for the generation of objectives. These students provide a reservoir of trained personnel that has been tapped by the project and the operational IOX throughout its history.

The physical environment for the project staff is presently in the IOX offices which have recently been expanded to provide ample work space and more privacy. Support facilities and libraries are readily available both within the University (easy walking distance) and the City of Los Angeles. The order and shipping warehouse (not part of this project, but part of the operation of the nonprofit corporation that sells objective collections) is located in San Fernando, only minutes away from IOX offices by freeway.

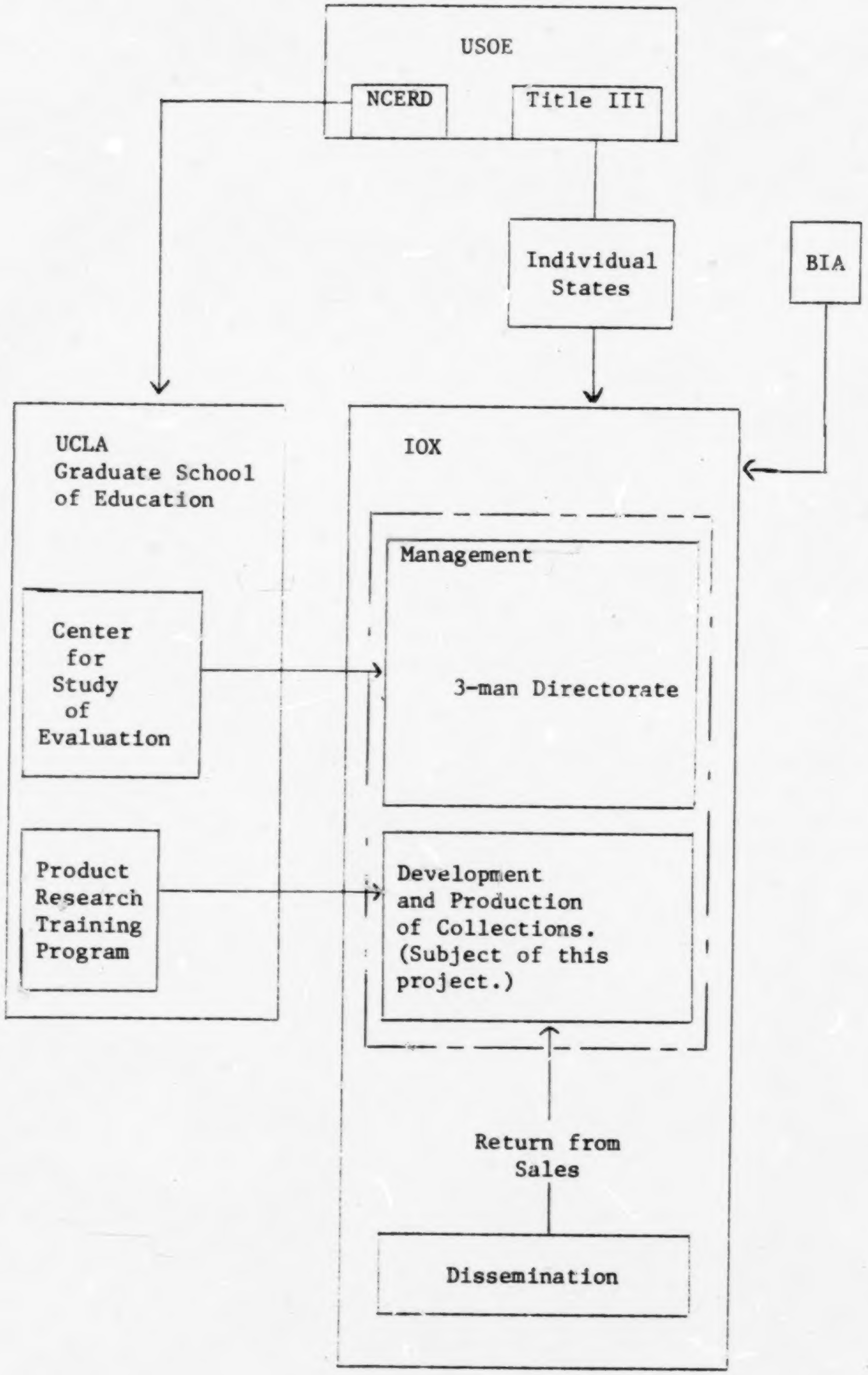
USOE
NCERD
Title III
Individual States
BIA
UCLA Graduate School of Education
Center for Study of Evaluation
Product Research Training Program
IOX
Management
3-man Directorate
Development and Production of Collections. (Subject of this project.)
Return from Sales
Dissemination

FIG. 1. Contextual map.

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Chapter II: Parameters of the Project

This chapter discusses the staffing pattern of the IOX Project, includes a roster of staff, describes the outputs being generated, and shows the dependent relationships of the outputs in an output map.

Project Structure

Staff structure. Figure 2 graphically illustrates the staffing of this project. Along with the Project Director two other IOX staff members make up the 3-man directorate. Major decisions within the project are made by majority decision of this 3-man directorate.

Under the directorate, six staff members designated as research associates are responsible for generating the outputs described in this profile. In addition to the people who produce the project's outputs, there is a clerical staff of one and a shipping clerk. The clerk's responsibility is to ship out Exchange products (which are ultimately derived from the projects output) in response to orders received from the field. This latter activity is not conducted at the IOX offices, but at another location.

The project is unique in that for all except the clerical help the staff are largely supported by other activities, although they may spend a major part of their time working for this project.

Project roster. The following is a roster of project personnel. Those people interviewed are identified.

1. Project Director. He is responsible for interfacing with other agencies, and is chairman of the 3-man directorate which makes major decisions regarding the objectives and measures to be generated, structure, format, etc. (interviewed)

2. Directorate. Three people, including the Project Director, who jointly preside over decisions to be made in the course of the project. (all interviewed)

3. Research Associates. These people (presently six in number) are responsible for generating the objectives and measures and putting them into collections. (not interviewed)

4. Clerical Staff. This staff responds to phone calls, attends to incoming correspondence, handles routine typing, etc. (not interviewed)

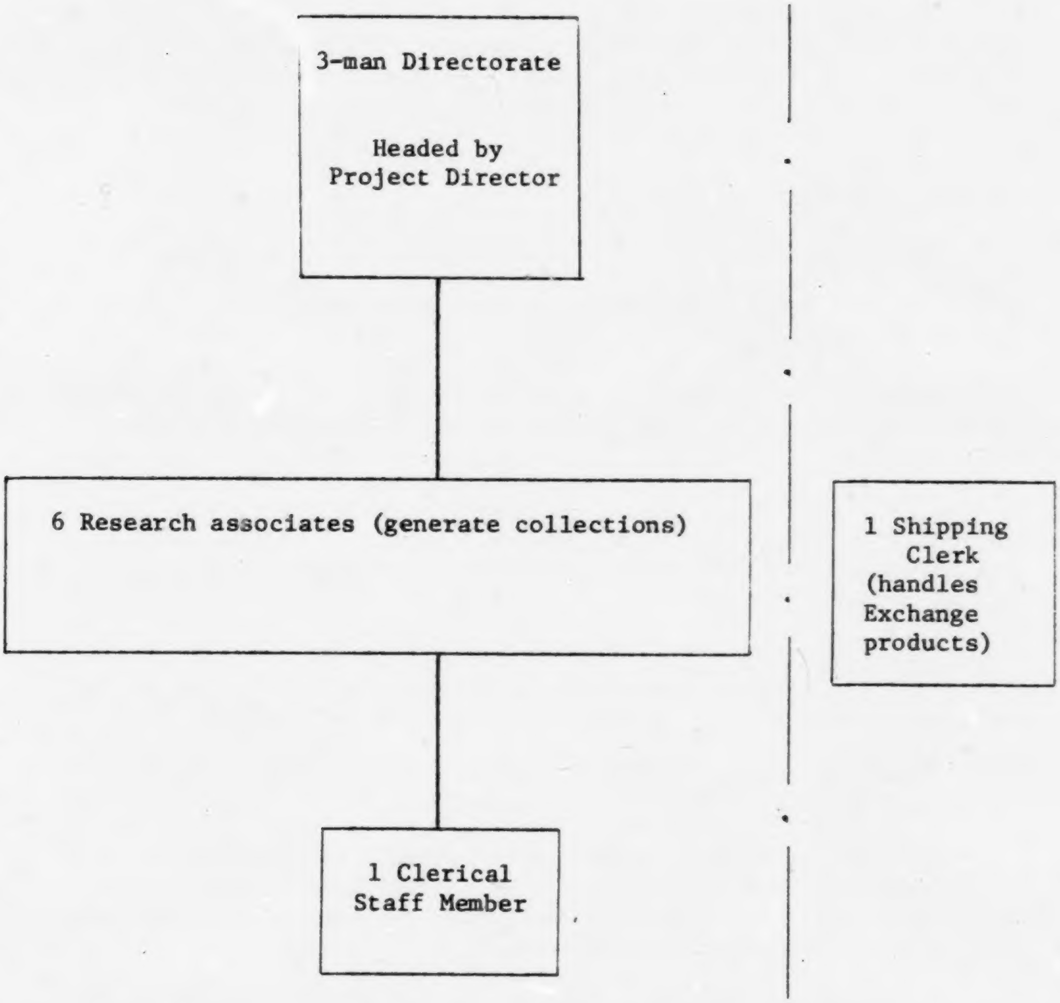
3-man Directorate
Headed by Project Director
6 Research associates (generate collections)
1 Shipping Clerk (handles Exchange products)
1 Clerical Staff Member

FIG. 2. Staff structure.

Outputs Generated

Figure 3 shows how the library of collections that constitutes the focal output of this project is built. In addition to the objectives and measures that make up the collection, there is a commitment to provide guidance in their use. The intent is to make this as open as possible. This is clearly stated in the publications of the project.

Figure 4 shows a generic set of subproducts, some or all of which may appear in generating each tryout version. In the concern for producing, e.g., the final published collection; and again when collections are revised for republication at some later date, the project exercises a quality control influence by the mechanism shown in Figure 5. This varies according to the collection to which it is applied. Figure 6 shows a generic set of subproducts that go into producing the data summary responsible for providing this quality control. In a sense, Figures 3 and 5 represent different "dimensions" in the relationship between outputs that intersect, as will become evident as the description proceeds.

Looking further ahead, Figure 7 shows the production plan for generating a revised classification scheme, with a view to providing more useful objectives and measures as tools. The present series are felt to be inadequate by virtue of the constraints imposed by arrangement within time-honored discipline boundaries.

Index of products. The products identified in Figures 3 through 7 are listed following these figures. The first three products are major headings for classes of products that correspond with the three stated objectives of the project. Each of items P-04[1] through P-11 then commence with a tryout version, generically designed P-13. Also shown in Figure 3 are the development stages of item P-12 using item P-42 through P-44.

Figure 4 shows the generic structure of P-13, using items P-14 through P-20, some or all of which may be relevant to any individual final outcome item in the groups P-04 through P-11.

In Figure 5, item P-02 is subdivided into parts represented by items P-21 through P-23, according to the point along the development of an individual collection at which the control is being exerted, and these further subdivide into items P-24 through P-27, the last of which derives from P-28, and all of which are dependent on a data summary generically designated P-29.

Figure 6 gives the generic basis for each data summary, including items P-30 through P-34.

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[1] Each output is identified by an arbitrary number consisting of two parts: (a) a letter P, E, or C (product, event, or condition), and (b) a sequence number irrespective of the letter.

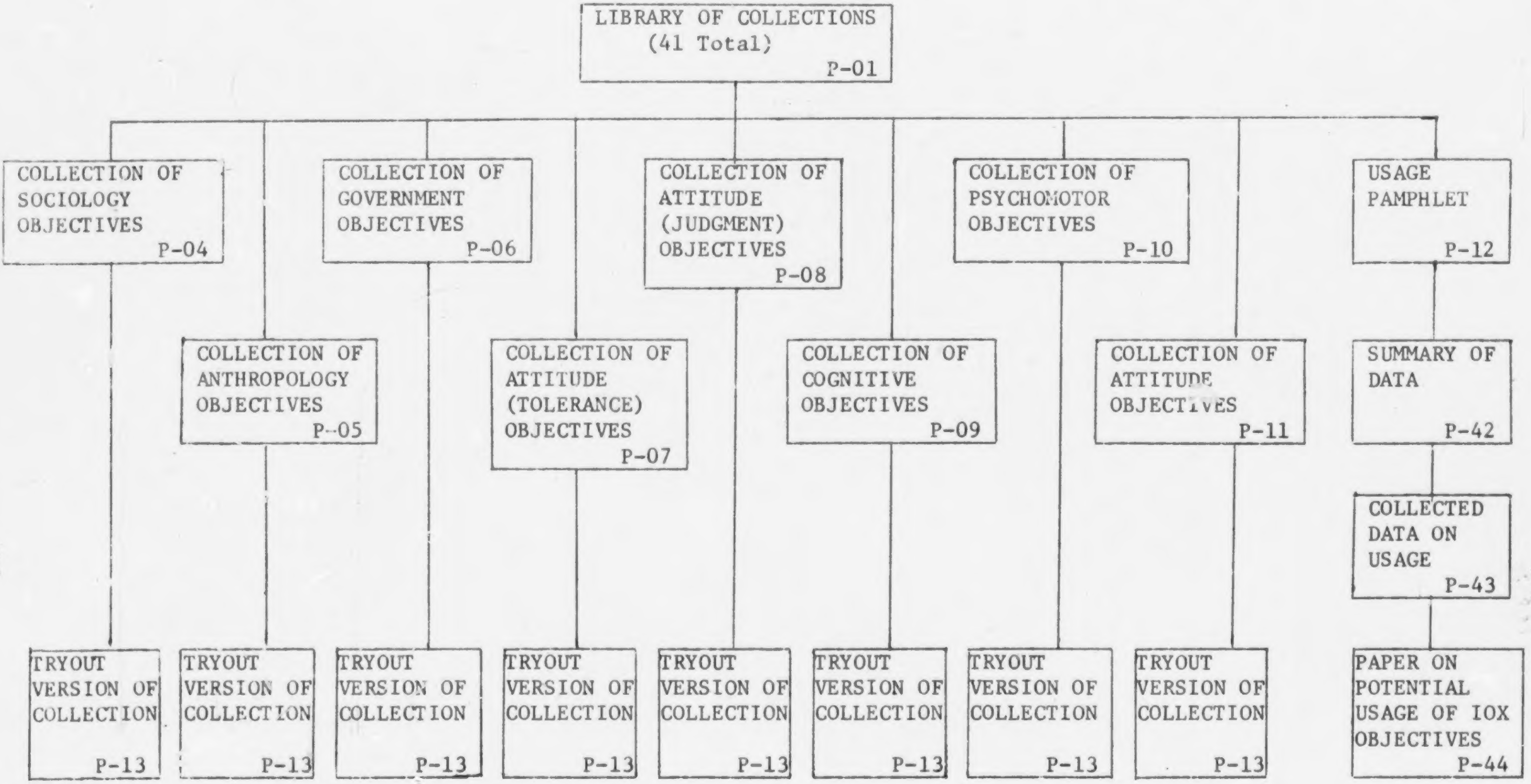
LIBRARY OF COLLECTIONS (41 Total) P-01
COLLECTION OF SOCIOLOGY OBJECTIVES P-04
COLLECTION OF ANTHROPOLOGY OBJECTIVES P-05
COLLECTION OF GOVERNMENT OBJECTIVES P-06
COLLECTION OF ATTITUDE (TOLERANCE) OBJECTIVES P-07
COLLECTION OF ATTITUDE (JUDGMENT) OBJECTIVES P-08
COLLECTION OF COGNITIVE OBJECTIVES P-09
COLLECTION OF PSYCHOMOTOR OBJECTIVES P-10
COLLECTION OF ATTITUDE OBJECTIVES P-11
USAGE PAMPHLET P-12
SUMMARY OF DATA P-42
COLLECTED DATA ON USAGE P-43
PAPER ON POTENTIAL USAGE OF IOX OBJECTIVES P-44
TRYOUT VERSION OF COLLECTION P-13
TRYOUT VERSION OF COLLECTION P-13
TRYOUT VERSION OF COLLECTION P-13
TRYOUT VERSION OF COLLECTION P-13
TRYOUT VERSION OF COLLECTION P-13
TRYOUT VERSION OF COLLECTION P-13
TRYOUT VERSION OF COLLECTION P-13
TRYOUT VERSION OF COLLECTION P-13

FIG. 3. Output map.

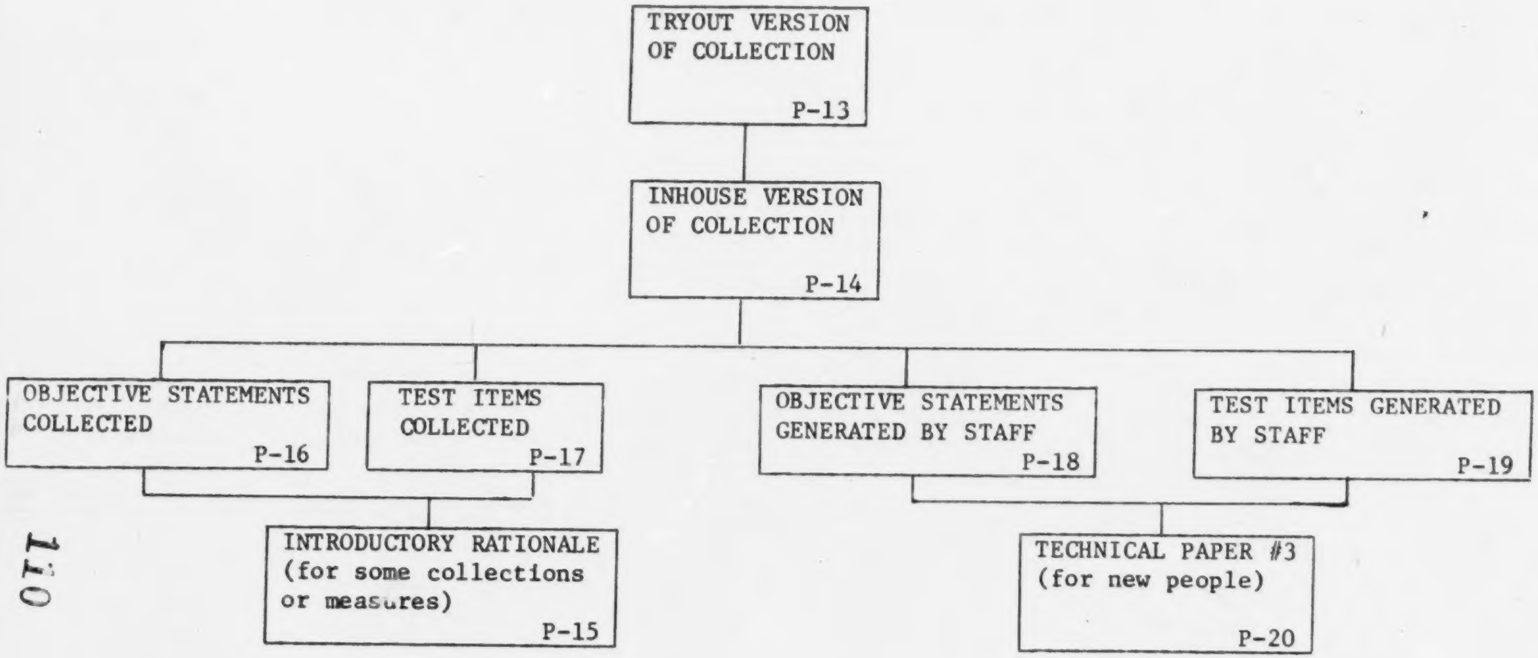
TRYOUT VERSION OF COLLECTION P-13
INHOUSE VERSION OF COLLECTION P-14
OBJECTIVE STATEMENTS COLLECTED P-16
TEST ITEMS COLLECTED P-17
OBJECTIVE STATEMENTS GENERATED BY STAFF P-18
TEST ITEMS GENERATED BY STAFF P-19
INTRODUCTORY RATIONALE (for some collections or measures) P-15
TECHNICAL PAPER #3 (for new people) P-20

FIG. 4. Output map (generic structure of P-13, Tryout Version of Collection).

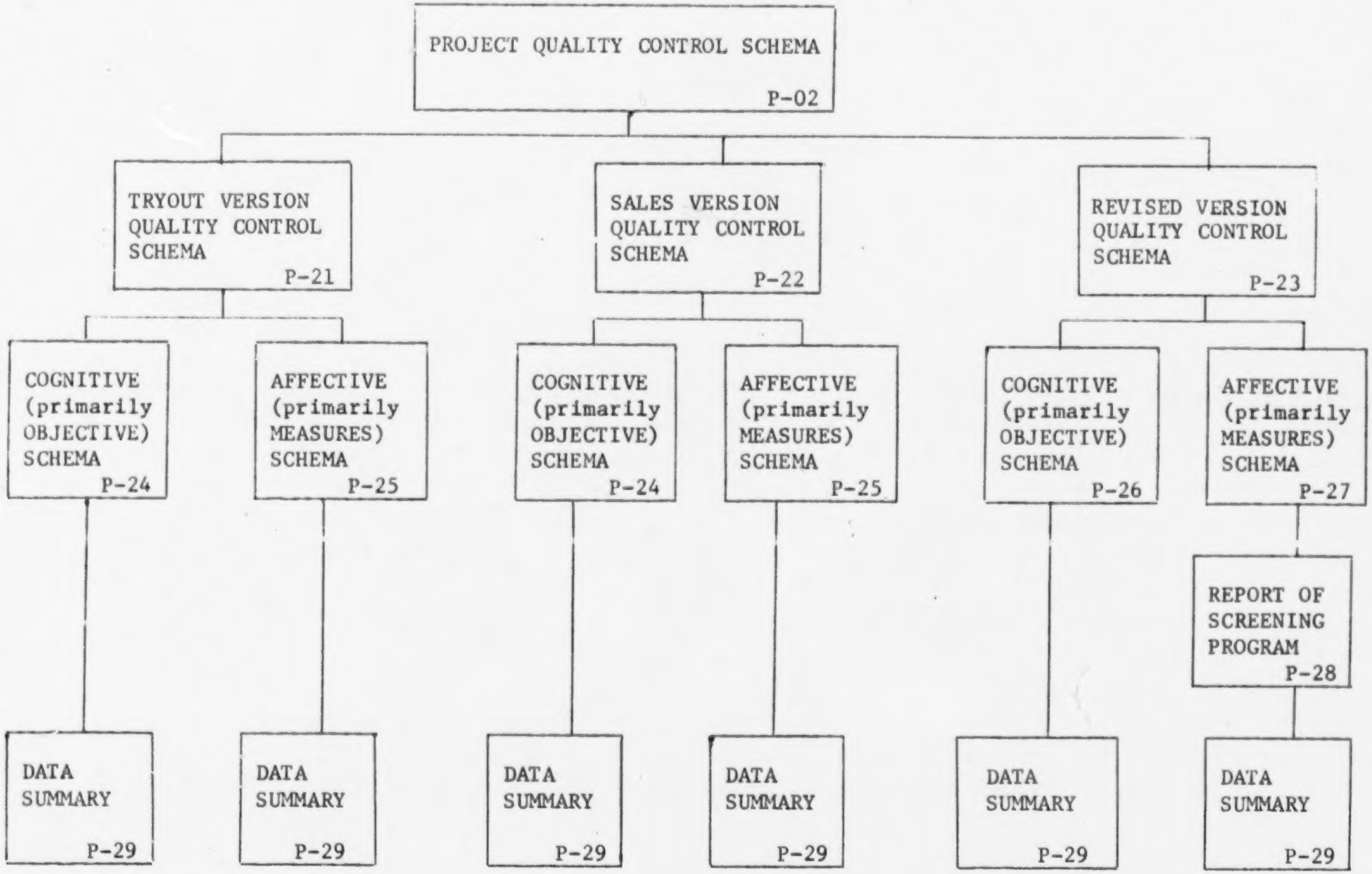
PROJECT QUALITY CONTROL SCHEMA
P-02
TRYOUT VERSION QUALITY CONTROL SCHEMA
P-21
SALES VERSION QUALITY CONTROL SCHEMA
P-22
REVISED VERSION QUALITY CONTROL SCHEMA
P-23
COGNITIVE (primarily OBJECTIVE) SCHEMA
P-24
AFFECTIVE (primarily MEASURES) SCHEMA
P-25
COGNITIVE (primarily OBJECTIVE) SCHEMA
P-24
AFFECTIVE (primarily MEASURES) SCHEMA
P-25
COGNITIVE (primarily OBJECTIVE) SCHEMA
P-26
AFFECTIVE (primarily MEASURES) SCHEMA
P-27
REPORT OF SCREENING PROGRAM
P-28
DATA SUMMARY
P-29
DATA SUMMARY
P-29
DATA SUMMARY
P-29
DATA SUMMARY
P-29
DATA SUMMARY
P-29
DATA SUMMARY
P-29

FIG. 5. Output map (generic structure of P-02, Project Quality Control Schema).

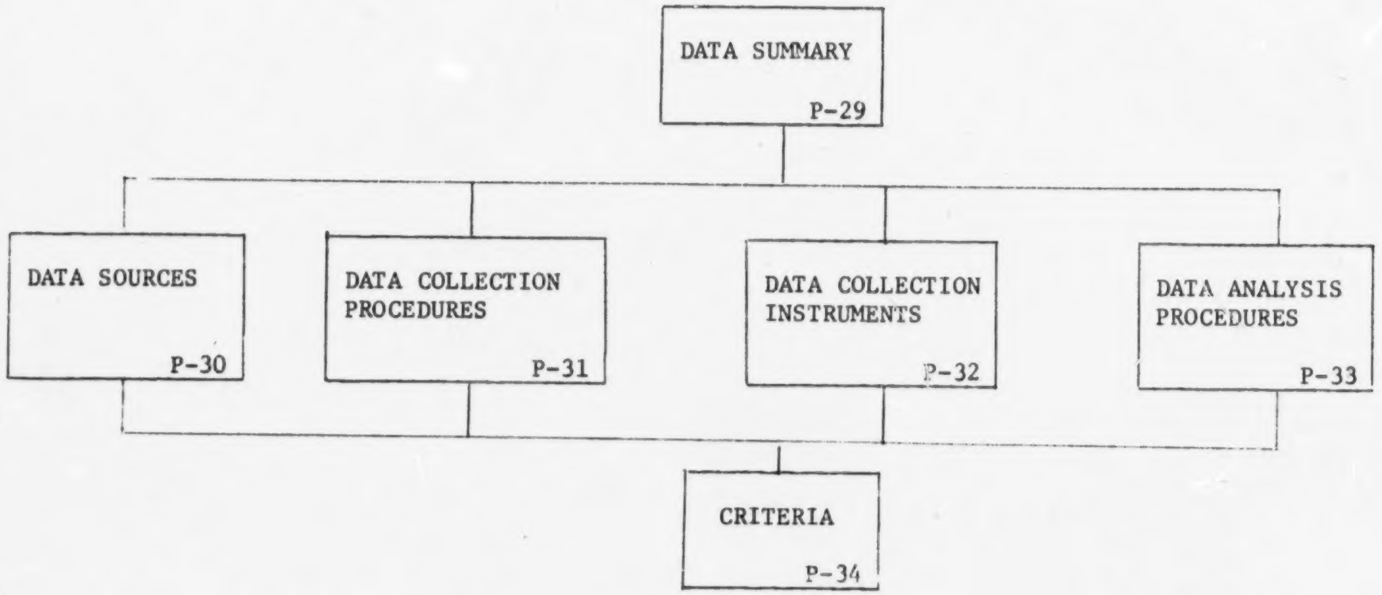
DATA SUMMARY
P-29
DATA SOURCES
P-30
DATA COLLECTION PROCEDURES
P-31
DATA COLLECTION INSTRUMENTS
P-32
DATA ANALYSIS PROCEDURES
P-33
CRITERIA
P-34

FIG. 6. Output map (generic structure of P-29, Data Summary).

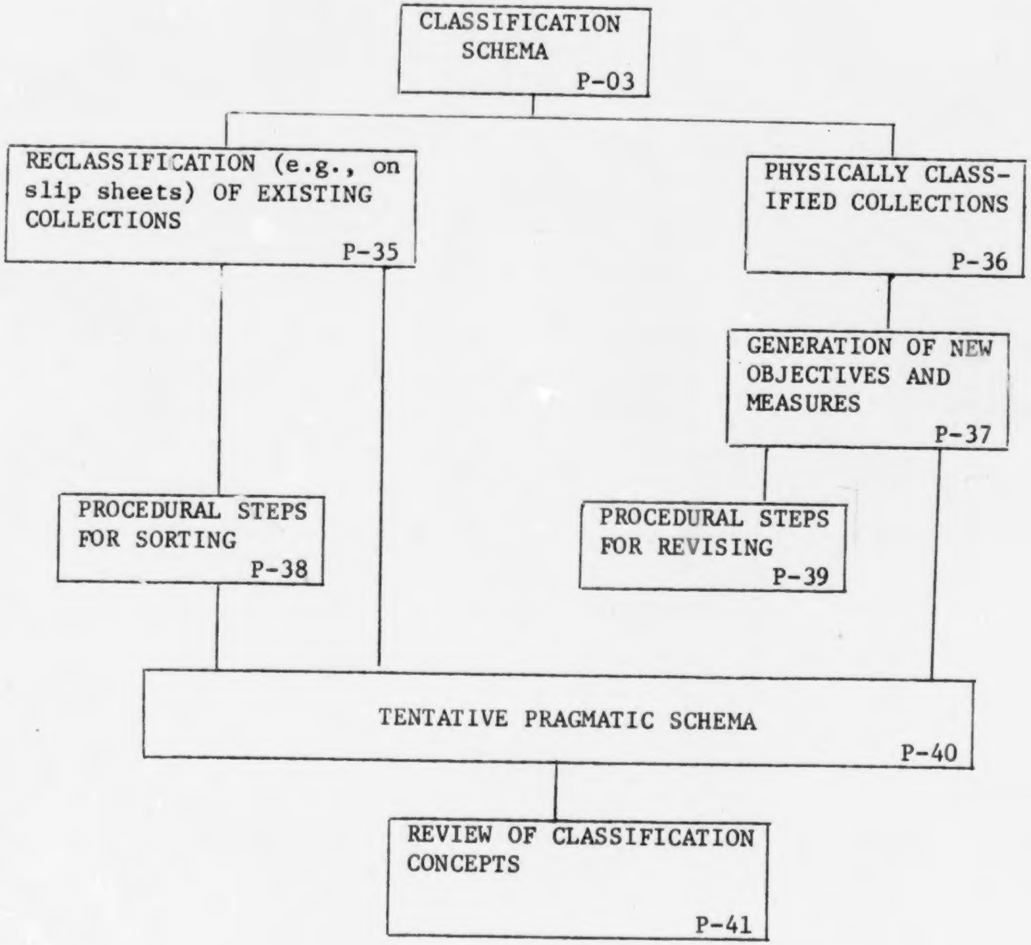
CLASSIFICATION SCHEMA
P-03
RECLASSIFICATION (e.g., on slip sheets) OF EXISTING COLLECTIONS
P-35
PHYSICALLY CLASSIFIED COLLECTIONS
P-36
GENERATION OF NEW OBJECTIVES AND MEASURES
P-37
PROCEDURAL STEPS FOR SORTING
P-38
PROCEDURAL STEPS FOR REVISING
P-39
TENTATIVE PRAGMATIC SCHEMA
P-40
REVIEW OF CLASSIFICATION CONCEPTS
P-41

FIG. 7. Output map (generic structure of P-03, Classification Schema).

Figure 7 takes the third major intended output of this project, P-03 and sets forth a projected structuring of the products leading to its generation, including items P-35 through P-41.

In the interviewing of personnel at this project, specific intersections of these items were interrogated around. These form the final portion of the listing below, following P-44. For the purpose of identifying the data as assembled for analysis by the computer, these items are identified by the intersections of categories shown on Figures 3 through 6.

P-01. Library of Collections Containing Behavioral Objectives & Measures. This is the major output of the project. It is thus continually in progress, in the sense that new items are being worked on to add to it, while others may be being updated or improved.

P-02. Quality Control Schema for the Library. This is the second major commitment of the project. As such, development of improved methods for ensuring quality upgrading are continually being developed.

P-03. New Classification Schema for Behavioral Objectives. This is the third major commitment of the project. Actual tangible products in its development are still to be developed as of the time the project was visited. The responses that form the basis for the information were those projected as steps in development of a suitable schema. (This item was interviewed around.)

P-04. Collection of Sociology Objectives and Measures. This is one of the new items being worked on, as of the time of the site visit.

P-05. Collection of Anthropology Objectives and Measures. Another new collection being developed.

P-06. Collection of Government Objectives and Measures. Another new collection being developed.

P-07. Collection of Attitude (Tolerance) Objectives and Measures. A relatively new collection, only recently finished.

P-08. Collection of Attitude (Judgement) Objectives and Measures. A new set of objectives being developed as a result of a need perceived by staff who worked on P-07.

P-09. Set of Collections of Cognitive Objectives and Measures. These collections have been in existence for some time, most of them since the time when the Exchange collected existing objectives and measures.

P-10. Set of Collections of Psychomotor Objectives and Measures. Another part of the existing set, distinguished by the different type of objectives included.

P-11. Set of Collections of Attitude Objectives and Measures. An effective group of measures within the existing set.

P-12. Revised Usage Manual Explaining Some Potential Uses of the IOX Objectives. A still to be produced manual for which the ground-work has already been laid.

P-13. Set of Field Tryout Versions of the Collections, One for Each Collection. For any given collection this may presently be completed, worked on, or yet to be started. Thus, in the generic sense, production of tryout versions is an ongoing activity.

P-14. Set of Inhouse (Bench Test) Versions of the Objectives and Measures (at least one for each tryout). This precedes the tryout version (P-13) and is a sort of bench-test set, tried out under quite close supervision, prior to being released in an adequate tryout form.

P-15. Set of Introductory Rationale Statements for Some of the Collections. When the objectives are completed in a form for publication, these will form an introduction to the publication containing them. However, they may be an expressed (written or otherwise) statement prepared before the objectives, and thus serve as a basis for such preparation, or they may be generated merely as a guide to the user.

P-16. Set of Objectives Statements Collected from External Sources. While objectives which were the major source for items P-09 through P-11 were submitted from outside sources, the trend has been to develop most objectives inhouse (item P-18).

P-17. Set of Test Items Collected from External Sources. When objectives were collected from external sources, some test items came with them. Also, in some instances, additional items needed generating to round out the collection.

P-18. Objectives Statements Generated Within IOX Project. These were originally generated for the purpose of completing collections where items gathered from external sources had identifiable gaps. More recently, virtually all objectives for a collection are generated within the project.

P-19. Set of Test Items Generated Within IOX Project. Originally, these were merely to round out sets collected from external sources or to provide test items where they were lacking. The current trend is to generate all test items for a collection within the project.

P-20. Technical Paper #3. A paper produced earlier in the project and still used serves as a guide for new people on the staff in generating objectives and measures. (interviewed around)

P-21. Quality Control Schema for Tryout Versions of Collections. This is an ongoing, developing means of upgrading quality at the most sensitive stage of development. (Both subdivisions of this item were interrogated around.)

P-22. Quality Control Schema for Sales Versions of Collections. Application of data, largely obtained during the tryout phase, to ensure highest quality of sales version.

P-23. Quality Control Schema for Revised Versions of Collections. Utilizing longer term feedback to improve quality used when it is time to bring out a revised version.

P-24. Quality Control Schema for Objectives (Primarily Cognitive Collections). Procedures related to objective measures.

P-25. Quality Control Schema for Measures (Primarily Affective Measures). Procedures related to the affective measures.

P-26. Quality Control Schema for Preferential Data on Objectives. (interviewed around)

P-27. Quality Control Schema for Screening of Measures for Revision (Primarily Affective).

P-28. Report on Quality Control Screening Program.

P-29. Data Summary for Quality Control Program. This is the generic output which may be in present, past, or future item descriptions.

P-30. List of Data Sources for Quality Control Program. Where a number of sources are used for quality control data, this will serve as a checklist for their utilization.

P-31. Data Collection Procedures for Quality Control Program.

P-32. Data Collection Instruments for Quality Control Program.

P-33. Data Analysis Procedures for Quality Control Program.

P-34. Criteria for Quality Control Program.

P-35. Reclassification of Existing Collections. This is presently seen as a sheet to be included in existing collections. It will indicate the reclassification of objectives and/or measures contained in that collection under the new schema.

P-36. Physically Classified Collections Under New Classification Schema. This will be a rounded out collection, built according to the new schema, with categories filled as revealed by the new schema.

P-37. New and Revised Objectives and Measures. Built according to the new schema.

P-38. Procedural Steps for Sorting the Existing Objectives in Collection. Devised to suit the new classification sets.

P-39. Procedural Steps for Revising Existing Objectives into New Classification Sets.

P-40. Tentative New Pragmatic Classification Schema. A working design to initiate a new arrangement of categories of objectives. The objectives will be further refined on the basis of the experience that will be generated by the process of classification.

P-41. Review of Proposed Classification Suggestions. A review of all proposals in the literature having some promise of providing viable new classification schema (interviewed around)

P-42. Summary of Data on Actual Use of Collections in the Field.

P-43. Data on Actual Use of Collections in the Field.

P-44. Presently Used Pamphlet on Potential Uses of IOX Objectives.

The following items have been given identifying P numbers, but each of them is an intersection of two sets of generic categories in the foregoing section of the list. The identifying intersecting product numbers follow the individual P number. Thus P-06/P-15 signifies an intersection of P-15, an introductory rationale, as an element of P-06, the collection of attitude objectives. All of the following items were interviewed around, except where otherwise noted.

P-45. P-06/P-15. Rationale Statement for American Government Objectives.

P-46. P-08/P-13. Tryout Version of Cognitive Judgment Measures. In the course of generation, some tryouts had been given. The finalized tryout version was still to be produced at time of visit.

P-47. P-08/P-14. Inhouse Version of Cognitive Judgment Measures. This existed at time of visit and had been used for tryouts.

P-48. P-08/P-15. Rationale Statement for Cognitive Judgment Measures. This statement sparked the activity to generate this collection of measures.

P-49. P-08/P-18. Staff Generated Objective Statements for Cognitive Judgment Measures. These are statements of the objectives to be measured based on the rationale and literature search.

P-50. P-08/P-19. Staff Generated Test Items for Cognitive Judgment Measures. Items designed to measure the objectives generated.

P-51. P-12/P-29. Summary of Data on Usage of Objectives and Measures for Usage Pamphlet. This product is in the process of assembly.

P-52. P-21/P-24. Quality Control Schema for Tryout Version of Cognitive Objectives.

P-53. P-21/P-25. Quality Control Schema for Tryout Version of Affective Measures.

P-54. P-04/P-14. Inhouse Version of Sociology Objective Collection.

P-55. P-27/P-29. Data Summary for Affective Measures Quality Control. (Item analysis)

P-56. P-27/P-33. Data Analysis Procedures for Affective Measures Quality Control.

P-57. P-26/P-29. Data Summary for Cognitive Objectives Quality Control. (Item Analysis)

P-58. P-26/P-30. Data Sources for Cognitive Objectives Quality Control.

P-59. P-26/P-31. Data-gathering Procedures for Cognitive Objectives Quality Control.

P-60. P-26/P-33. Data Compilation Instrument for Cognitive Objectives Quality Control.

P-61. P-26/P-33. Data Analysis Procedures for Cognitive Objectives Quality Control.

P-62. P-07/P-14. Inhouse Version of Attitude Objectives Collection.

P-63. P-22/P-24. Quality Control Schema for Sales Version of Cognitive Objectives.

P-64. P-23/P-34. Criteria for Revising Sales Versions of Objectives and Measures. (not interviewed around)

P-65. P-22/P-25. Quality Control Schema for Sales Version of Affective Measures. (not interviewed around)

P-66. P-27/P-28. Rough Draft of Data Report for Revised Sales Version Attitudinal Measure Quality Control.

Events and conditions of the project. At this project an extremely informal, helpful, and cooperative atmosphere prevails. Management takes the form of a 3-man directorate to whom all major decisions are referred. Being located in convenient proximity to UCLA means that personnel have relatively easy access to subject matter experts for advice whenever needed. Thus, as revealed in the detailed responses in Appendix A, the staff refers to appropriate faculty or other campus resources on an informal basis whenever the occasion demands or, even lightly, "suggests."

Chapter III: Summary of the Data

Each of the tables included in this chapter summarizes a category of data obtained in relation to the various outputs identified for the IOX Project. The column labeled "Project Outputs" identifies the outputs of the project which are appropriate to that table. (Only those outputs for which data were obtained during the interviews with staff are included.) The categories of data shown in the tables are the standards by which the satisfactory completion of the outputs are judged, the tasks required to generate an output meeting those standards, and the enablers (knowledges, skills, sensitivities) which facilitate the carrying out of those tasks. Within each of these categories is found a list of descriptive labels which are representative of interviewee statements. In the process of reducing this interview data, narrative interviewee statements were first linked to one of the above categories, then classified by means of a number code under the most representative descriptive label. Each table provides the frequency with which interviewees cited specific statements (represented by the descriptive labels) of each category.[2]

Standards have been assembled into two category sets: Those based on management considerations, and those strictly related to the product or output against which they appear. Table 1 shows the management (process/operations) standards, listed in columns with their set designators (LM). In the Appendix listings for standards, these are associated with the digit "2" in the J column. Thus, against Output P-41, a management standard with the number 36 appears in Table 1, which bears the category set label, "36 - employment criteria met." In the Appendix, under Output P-41, the first standard, with designator 2 36, reads, "people selected were capable of generating alternative hypothesis," which indicates in what respect candidate(s) (plural in this case) met criteria.

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[2] If the reader is interested in the narrative statements of the interviewees, these can be found in the Appendix. To locate the narrative statement for any given category, first note the output and its identification number in the table. Second, note that each descriptive label within a given category has a distinct number or code. Turn to the Appendix and locate the output. Under the output locate the category label or heading (standard, task. or enabler) and pinpoint the number or numbers (depending on frequency cited) of the descriptive label which appeared in the table. The statement in the Appendix opposite this number is the original narrative statement from an interviewee and is only represented in the table by the descriptive label and its number coding.

TABLE 1
Process Standards Cited for Each Output Analyzed

Project Outputs No. Label	Primary Categories of Standards for Processes (Category code no. and label for coding set F-2)						Output Totals
	08 Staff Contributions accepted	14 No felt deficiencies	15 Tasks perceived & acted upon	17 External enthusiasm evident	24 Costs acceptable for benefits	36 Employment criteria met	
P-41 Review of Classification Concepts						1	1
P-47 Inhouse Version of Cogntve Judgt Meas				2			2
P-48 Rationale for Cogntve Judgt Meas			1				1
P-55 Data Sum for Affective Meas Qual Contrl		1					1
P-56 Data Anal Proc for Affective Meas Qual Contrl		1					1
P-58 Data Sources for Cogntve Objs Qual Contrl						1	1
P-59 Data-gathering Proc for Qual Contrl					1		1
P-60 Instr for Cogntve Objs Qual Contrl					1		1
P-63 Qual Contrl for Sales Ver of Cogntve Objs	1						1
P-66 Data for Sales Ver Att Meas Qual Contrl		2					2
Category TOTALS	1	4	1	2	2	2	12

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Output P-66 presents an interesting example of the value of the verbal statements contained in the Appendix, because both management-standards (this refers to the type, not necessarily to the relevant judgments being made by management) bear the same designator: "14 - no felt deficiencies." The wording of the entries numbered 2 14 under Output P-66 in the Appendix shows that these were actually different bases for making that kind of judgment.

Table 2 lists the production standards. These standards were much more plentiful on this project. An interesting set is the one designated "01 completeness of content." Against Output P-03, "A New Classification Schema," appears the description, "the system includes objectives applicable across subject fields." Against Output P-54, Generated Objectives/Test Items for the Sociology Collection, appears the description, "feel field is covered in each area as additional review of literature fails to turn up new areas." And against Output P-66, "Rough Draft of a Data Report---," testing design included all grade levels and some variety in socio-economic backgrounds." Completeness of content, therefore, has three different contexts within this one project. Other standards can present equally interesting studies.

Table 3 lists the tasks associated with each output analyzed. The remaining three tables, 4 through 6, tabulate the knowledges, skills, and sensitivities educed from the interviews relative to the outputs they benefit.

In Table 4, the one variety of knowledge that spreads fairly uniformly across the production of all outputs has a total frequency count of 13 (out of 48 total across 15 categories of knowledge). It is knowledge of RDD&E subjects. Examination of the words used in the appendix, against entries for 1 03 in the enablers listings for Outputs P-20, P-49, P-53, P-55, P-56, P-57, P-60, P-61, and P-66, show that the total knowledge required covers quite a range.

In Table 5, the skills listed are somewhat scattered, with a total frequency count of only 29. The biggest concentration of skills was obtained in response to interviewing around the data summary for cognitive objectives quality control (P-57).

In Table 6, the distribution of sensitivities also looks like a scatter diagram, with the exception of one variety of sensitivity that is spread fairly uniformly across the set: 3 02, described generically as sensitivity to capabilities and limitations. However, the overall conclusion, by comparing the three tables, is that personal enablers having the general characteristics of knowledges and sensitivities are each cited about twice as often as those that may be considered as skills.

TABLE 2

Output Standards Cited for Each Output Analyzed

Project Outputs		Primary Categories of Standards for Outputs (Category code no and label for coding set t-1)																							Output Totals
No.	Label	01 Completeness of content	03 Quantity of effort expended	04 Communication and clarity	05 Utility or value	06 Acceptance by users	07 Personal satisfaction/feeling	08 Agreement concurrence w/others	09 Lack of errors/discrepancies	11 Appropriate design/content	12 Goal attainment	13 Acceptance by others (in proj)	14 Compares favorably	18 Satisfactory appearance	19 Logical criteria	20 Performs consistently	21 Sources of variance controlled	22 Functions as planned	24 Terminology appropriate	26 Components are complementary	28 Operable by others	30 Lack of negative feedback	31 Meets legal constraints	32 Created by reputable producer	
P-03	Classification Scheme	1			1	2		1																	5
P-20	Technical Paper #3						1															1			2
P-21	Tryout Version Quality Control Scheme											1							2	2					5
P-26	Cogntve Objs Quality Control Scheme			1	2							1													4
P-41	Review of Classification Concepts			1	1					1	2														5
P-47	Inhouse Version of Cogntve Judgt Meas															1				1					2
P-48	Rationale for Cogntve Judgt Meas					1							1		1										3
P-49	Staff-gen Objs for Cogntve Judgt Meas											1			1										2
P-50	Staff-gen Items for Cogntve Judgt Meas											1					1	1							3
P-51	Data on Usage of Objs/Meas for Usage Mas																	1							1
P-52	Qual Contrl for Tryout Ver of Cog Objs					1	1					1													3
P-53	Qual Contrl for Tryout Ver of Afftv Meas								1		1	1													3
P-54	Inhouse Ver of Sociology Objs	1				1	2					1	1												6
P-55	Data Sum for Affective Meas Contrl				2		1		1			1													5
P-56	Data Anal Proc for Afftv Meas Qual Con				1							1													2
P-57	Data Sum for Cogntve Objs Qual Contrl			2	2	1		1				1		1							1				9
P-58	Data Sources for Cog Objs Qual Contrl				1																				1
P-59	Data-gath Proc for Cog Objs Qual Contrl		1																						1
P-60	Instr for Cogntve Objs Qual Contrl										2							1			2	2	1	1	9
P-61	Data Anal Proc for Cog Ojbs Qual Contrl									1															1
P-62	Inhouse Ver of Attitude Objs Collection											1													1
P-63	Qual Contrl for Sales Ver of Cog Objs											1													1
P-66	Data for Sales Ver Att Meas Qual Contrl	1			1		1				1	1			1										6
	Category TOTALS	3	1	4	11	6	6	2	2	2	6	13	2	1	3	1	1	3	2	3	3	3	1	1	80

TABLE 3
Tasks Cited for Each Output Analyzed

NO. Label — Project Outputs	01 Clarifying problem addressed	02 Formulating objectives	03 Designing the output	04 Producing the output	05 Collecting/processing data	06 Assessing the output quality	07 Diffusing the output	21 Procuring professional staff	22 Effecting accountability	23 Procuring systems/services	24 Effecting quality control	26 Facilitating growth of staff	29 Facilitating relationships	30 Effecting info flow patterns	31 Diffusing info within project	33 Effecting decision mechanism	Output Totals
	Cluster of Tasks (Category code no. and label for coding set NO)																
P-03 Classification Schema	2	1	4	1	2							1					11
P-20 Technical Paper #3		1		1													2
P-21 Tryout Version Quality Control Schema	1		1			6			1		5		1				15
P-26 Cognitive Objectives Quality Control Schema					1	3					2						6
P-41 Review of Classification Concepts		1				3		2									6
P-45 Rationale Statement for Government Objectives	1	1		1													3
P-46 Tryout Version of Cognitive Judgment Measures									1				1				2
P-47 Inhouse Version of Cognitive Judgment Measures				2	2	1											5
P-48 Rationale for Cognitive Judgment Measures		3	1	2												2	8
P-49 Staff-gen Objs for Cognitive Judgment Measures	3	3		2		3											11
P-50 Staff-generated Items for Cognitive Judgment Measures		1		2	1												4
P-51 Data on Usage of Objectives/Measures for Usage Manual	1				4		3				1		1				10
P-52 Quality Control for Tryout Version of Cognitive Objectives		2		1		7			1		4	1			4		20
P-53 Quality Control for Tryout Version of Affective Measures	1	1		2	1	3			3		4				1		16
P-54 Inhouse Verion of Sociology Objectives	10	2		3		4					2				3		24
P-55 Data Summary for Affective Measures Quality Control					4	1		5			1		1				12
P-56 Data Analysis Proc for Affctve Measures Quality Control	1			1	3										1		6
P-57 Data Summary for Cogntve Objs Quality Measures Control			1	1	3						2				1	1	9
P-58 Data Sources for Cognitive Objectives Quality Control				1						1				1			3
P-59 Data-gathering Proc for Cogntve Objs Quality Control			2		7	3					2		1				15
P-60 Instruments for Cognitive Objectives Quality Control	1			3	1	3							1	2		1	12
P-61 Data Analysis Proc for Cogntve Objs Quality Control	1			1	7	1											10
P-62 Inhouse Version of Attitude Objectives Collection	2														1		3
P-63 Quality Control for Sales Version of Cogntve Objs					3						4						7
P-66 Data for Sales Version Att Meas Quality Control		1		4	1	3								1			10
Cluster TOTALS	24	17	9	28	40	41	3	7	6	1	27	2	6	4	11	4	230

TABLE 4
Enabling Knowledges Cited for Each Output Analyzed

Project Outputs No. Label	01 Standard school subjects	02 Subjects learned in courses	03 Subjects related to RDD&E	04 Technical/professional topics	05 Project focus topics, external	06 Project variables, external	07 Project operation: general	08 Project operation: specific	12 Resources: personnel	17 Writing styles	18 Staff competencies/interests	22 Use of equipment/systems	23 Char's of target audience	26 Process implementation (proj)	27 Potential field settings	Output Totals
	Primary Categories of Enabling Knowledges (Category code no. and label for coding set 5-1)															
P-03 Classification Schema					1											1
P-20 Technical Paper #3			1													1
P-21 Tryout Version Quality Control Schema													1			1
P-26 Cognitive Objectives Quality Control Schema						1					1					2
P-41 Review of Classification Concepts									1							1
P-45 Rationale Statement for Government Objectives	1															1
P-46 Tryout Version of Cognitive Judgment Measures									1							1
P-48 Rationale for Cognitive Judgment Measures						1										1
P-49 Staff-generated Objectives for Cognitive Judgment Measures			1													1
P-52 Quality Control for Tryout Version of Cognitive Objectives	1				1											2
P-53 Quality Control for Tryout Version of Affective Measures			2	1				1								4
P-54 Inhouse Version of Sociology Objectives	2									1			1			4
P-55 Data Summary for Affective Measures Quality Control			2									1		1		4
P-56 Data Analysis Procedres for Affctve Meas Qual Control			1					1				3				5
P-57 Data Summary for Cognitive Objectives Quality Control		1	1			3										5
P-58 Data Sources for Cognitive Objectives Quality Control		1														1
P-60 Instruments for Cognitive Objectives Quality Control			1				1									2
P-61 Data Analysis Procedures for Cogntve Objs Qual Control	1	1	2													4
P-62 Inhouse Version of Attitude Objectives Collection								1								1
P-63 Quality Control for Sales Version of Cognitive Objectives															1	1
P-66 Data for Sales Version Attitudinal Measure Quality Contrl			2				1	1						1		5
Category TOTALS	5	3	13	1	2	5	2	4	2	1	1	4	2	2	1	48

TABLE 5
Enabling Skills Cited for Each Output Analyzed

Project Outputs No. Label	01 Teaching	02 Facilitating people interaction	05 Programming project events	09 Analytical problem solving	10 Analytical data handling	11 Disciplining self	14 Writing	17 Interpreting language	18 Finding fits/integrating	19 Planning/conceptualizing	20 Exercising judgment	23 Persuading/justifying	24 Explicating goals/procedures	26 Locating/maintaining info	31 Taking another's perspective	35 Communicating clearly	38 Using resources effectively	Output Totals
	Primary Categories of Enabling Skills (Category code no. and label for coding set S-2)																	
P-03 Classification Schema				1		1												2
P-20 Technical Paper #3																1		1
P-47 Inhouse Version of Cognitive Judgment Measures												1						1
P-49 Staff-generated Objectives for Cogntve Judgmt Measures									1									1
P-50 Staff-generated Items for Cognitive Judgment Measures																1		1
P-52 Quality Control for Tryout Version of Cognitive Objs	1						1	1		1								4
P-53 Quality Control for Tryout Version of Affective Meas								1										1
P-54 Inhouse Version of Sociology Objectives									1		1		1					3
P-55 Data Summary for Affective Measures Quality Control		1								1								2
P-57 Data Summary for Cognitive Objectives Quality Control			1		1		1			1	2			1			1	8
P-59 Data-gathering Procedures for Cognitive Objs Qual Contrl															1			1
P-60 Instruments for Cognitive Objectives Quality Control														1	1			2
P-63 Quality Control for Sales Version of Cognitive Objs												1						1
P-66 Data for Sales Version Attitudinal Meas Qual Control							1											1
Category TOTALS	1	1	1	1	1	1	3	2	2	3	3	2	1	2	2	2	1	29

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TABLE 6
Enabling Sensitivities Cited for Each Output Analyzed

Project Outputs No. Label	Primary Categories of Enabling Sensitivities (Category code no. and label for coding set S-3) 01 Values of self and others	02 Capabilities and limitations	03 Needs of self and others	04 Interactions of self and others	06 Worth in discipline/methods	07 Content of objectives	09 Awareness of alternatives	10 Awareness of structure	13 Language barriers	14 Reality in goal setting	16 Existing value systems	17 Personality of others	18 Potential conflict of interest	21 Limitations of analysis/data	22 Responses of target audiences	23 Cost/Benefit factors	24 Sources of error	25 Individual differences	27 Acceptability of outputs	30 Response sets of target audience	31 Nature/scope of output	34 Willingness to take guidance	35 Need to communicate effectively	39 Limits of "one-shot" efforts	40 Contractual/stated obligations	41 Inquisitiveness	42 Enthusiasm	43 Challenged by activity	Output Totals
P-03 Classification Scheme													1							1									2
P-20 Technical Paper #3		1																											1
P-21 Tryout Version Qual Cont Scheme		1																											1
P-26 Cognitve Objs Qual Contrl Scheme	1																												1
P-41 Review of Classfctn Concepts	1		1							1	1							1				1		1	1				8
P-48 Rationale for Cogn Judgt Meas											1										1								2
P-49 Staff-gen Objs for Cog Judg Meas																											1	1	2
P-51 Data on Usage of Objs/Meas for Usage Manual			1	1																									2
P-52 Qual Contrl for Tryout Version of Cognitive Objectives	1	2				1		1				1	1																7
P-53 Qual Contrl for Tryout Version of Affective Measures		3					1				1	1							1										7
P-54 Inhouse Ver of Sociology Objs		1							1																				2
P-55 Data Sum for Affct Meas Qual Con														2															2
P-57 Data Sum for Cog Objs Qual Con				1																									1
P-58 Data Sources for Cognitive Objectives Quality Control													1																1
P-59 Data-gath Proc for Cognatve Objectives Quality Control		1									1				3						1		1						7
P-60 Instr for Cog Objs Qual Con																1										1			2
P-61 Data Anal Proc for Cognatve Objective Quality Control														1															1
P-62 Inhouse Ver of Att Objs Coll																	1												1
P-63 Qual Con for Sales Ver of Cognitive Objectives		1																											1
P-66 Data for Sales Version Att Measure Quality Control					1									2	2						1								6
Category TOTALS	3	10	2	2	1	1	1	1	1	1	4	2	3	5	5	1	1	1	1	1	3	1	1	1	1	1	1	1	57

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Chapter IV: Supplementary Data

This chapter contains information about the backgrounds of the staff, the resources and equipment available for use by the staff in carrying out project tasks, the management of the project, and the classifications of output characteristics.

Summary of Staff Background

Of the eight professional people interviewed, the three that constitute the decision-making management group each had doctorate degrees, the remainder baccalaureates. Project salaries may not reflect a true picture of remuneration for work on this project, because each of these personnel has other commitments and teaching assignments with which they share their time.

Academic majors concentrated in education/teaching, with some support in psychology and in statistics/measurement. The three decision-making members of the team each had published more than 16 professional publications (the highest figure on the questionnaire for which a checkmark was provided). They aggregated 42 years of experience teaching in a college or university setting, 23 years of working in education conducting research and teaching in a school setting, four years of working in educational R & D centers, and various other experiences such as working with the Peace Corps.

Within the above experience is a total of 32 years directing educational research, development, and evaluation efforts.

In response to questions about the level of education necessary for the job, those with doctorates each answered that a lower degree would be appropriate. Of those with bachelor's degrees, two responded that the job required a master's degree.

As stated elsewhere in this profile, the working atmosphere on this project was enthusiastic--they believe quite strongly in what they are doing. Because of this, a work sharing takes place, based on a combination of personal interest, and of seeing "what needs doing" that serves to distribute the load for optimal progress.

In the job descriptions most of the professional staff list themselves as "research assistants." While there are various parts of the overall work to do, i.e., writing objectives and critiquing them, writing measures and critiquing them, collecting and processing data from the field to determine various aspects of quality control, etc. These jobs do not fall into the clearly defined patterns they might have assumed on a more formally organized project.

Each staff member has areas of interest in which he takes a particular interest and does most of the work. In addition to this, each responds to work loads of other staff members as the overall pressures indicate the need.

Support Resources

The following items were listed by various project staff members as being available from other persons or agencies for use in this project:

Printing.
Mimeograph.
Xerox.
Technical writing.
Editing.
Secretarial service. (other than typing)
Typing.
Purchase of supplies and equipment.
Library holdings.
Subscriptions to technical and professional journals/periodicals.
Requests for documents or publications not locally available.
Computer analysis services. (data processing)
Computer program writing.
Statistical consultation.
Subjects for experimentation or tryout of procedures.
Travel arrangements.
Budgetary and other fiscal accounting.
Scoring of test items.

Equipment listed as immediately available and used on the project, other than typewriters were:

Dictating equipment.
Desk calculators.

Most of the professional staff stated that they made trips for the project, some from 3 to 5 a year, others up to more than 25 a year. Trips of longer distance would be of 2-day duration, shorter trips of less than 1-day duration.

Project personnel also reported that a reasonable amount of time was made available to them for preparation of professional papers for publication, presentation of speeches at conventions and professional meetings, personal reading of current professional literature, establishment and maintaining of contact with other agencies and potential sponsors, and interaction with personnel on other projects within the organization.

The personnel also reported that they were expected to prepare professional papers and make presentations, as outlined in the previous paragraph.

Summary of Project Management

The questionnaire also provided the respondent (interviewee) the opportunity to describe the project management. The Project Director and his staff see the management very similarly, with slight individual differences of expression. The Project Manager and most of the staff do not see any specification of detailed time lines, although a few of the staff differed on this. Virtually unanimous were statements in support of weekly or biweekly staff meetings to review project progress, and about annual or semiannual review of individual performance and effectiveness.

On the subject of project structure, as viewed by project personnel, the questionnaire listed with a brief descriptor of each: pyramid, corporate structure, inverted pyramid, chain of command, leaderless, and other. Curiously some members of the staff checked each of these as describing this project. Perhaps the one that checked "other," with the following explanation, "We're not leaderless, but more of an informal cooperative team," provides the explanation for the other variations. That certainly describes the visiting group's perceptions of the project as a functioning structure.

In other projects visited interviews with the Project Director often elicited data about a condition called "project staff morale," in which the Project Director described tasks, enablers, and standards to indicate that satisfactory staff morale was achieved on the project. It would seem significant that that subject did not receive attention at this project.

The visit was initiated with a meeting at which the interviewing team met the entire project staff. As the visiting team explained and were questioned about the purpose of the visit and the kinds of information sought, the response was so open that, if the visiting team thought of morale at all, it was with the thought that this project did not have a problem in that area.

Classifications of Output Characteristics

Outputs may be categorized in terms of a number of variables. Among these are (a) Structure (products, events, or conditions), (b) Function (policy setting, management, or production), (c) Level (focal, component, or facilitating), (d) Character (knowledge, technology, implementation, or information), and (e) Stage of completion. These five schema are represented in Table 7 for each project output identified, with frequencies summarized for each category.

TABLE 7

Classifications of Output Characteristics

Project Outputs		Output Characteristic[a]																		
		Structure			Function			Level			Character (Products only)				Completion Stage					
No.	Label	p	e	c	ps	m	p	f_1	c	f_2	k	t	i_1	i_2	1	2	3	4	5	6
P-01	Library of Collections Containing Behavior Objectives and Measures	X					X	X				X						X		
P-02	A Quality Control Schema for Library of Collections	X				X		X				X						X		
*P-03	A New Classification Schema for Behavioral Objectives	X					X	X				X							X	
P-04	A Collection of Sociology Objectives and Measures	X					X	X				X						X		
P-05	A Collection of Anthropology Objectives and Measures	X					X	X				X						X		
P-06	A Collection of American Government Objectives and Measures	X					X	X				X						X		
P-07	A Collection of Attitude (Tolerance) Objectives and Measures	X					X	X				X					X			
P-08	A Collection of Attitude (Judgement) Objectives and Measures	X					X	X				X						X		
P-09	A Set of Collection of Cognitive Objectives and Measures (See List)	X					X	X				X			X					
P-10	A Set of Collection of Psychomotor Objectives and Measures (See List)	X					X	X				X			X					
P-11	A Set of Collection of Attitude Objectives and Measures (See List)	X					X	X				X				X				
P-12	A Revise Usage Manual - Explaining Some Potential Uses of the IOX OBJ (Inst. Obj. Exchange)	X					X		X			X						X		
P-13	A Set of (Field) Tryout Versions of the Collections - One for Each Collection	X					X		X			X						X		
P-14	A Set of In-House (Bench Test) Versions of the Objectives and Measures - At Least One for Each Tryout Version	X					X		X			X						X		
P-15	A Set of Introductory Rationale Statements for some of the Collections	X					X		X			X						X		
P-16	A Set of Objective Statements Collected from External Sources of the Catalog	X					X		X			X						X		
P-17	A Set of Test Items Collected from Each "In-House" Version of the Catalog	X					X		X			X						X		
P-18	A Set of Objective Statements Generated Within IOX Project of the Catalog	X					X		X			X						X		
P-19	A Set of Test Items Generated Within IOX Project of the Catalog	X					X		X			X						X		
*P-20	Technical Paper #3 (For New People) for which a Catalog is to be built	X			X					X		X			X					
*P-21	Quality Control Schema for Tryout Version of Collections	X				X				X		X						X		
P-22	Quality Control Schema for Sales Version of Collections	X				X				X		X						X		
P-23	Quality Control Schema for Revision Version of Collections	X				X				X		X						X		
P-24	Quality Control Schema for Objectives (Primarily Cog. Collections)	X				X				X		X						X		
P-25	Quality Control Schema for Measures (Primarily Aff. Collections)	X				X				X		X						X		
*P-26	Quality Control Schema for Preferential Data on Objectives	X				X				X		X						X		
P-27	Quality Control Schema for Screening of Measures for Revision (Primarily Aff.)	X				X				X		X						X		

TABLE 7 continued

Classifications of Output Characteristics

Project Outputs		Output Characteristic*																		
		Structure			Function			Level			Character (Products only)				Completion Stage					
No.	Label	p	s	c	ps	m	p	f_1	c	f_2	k	t	i_1	i_2	1	2	3	4	5	6
P-28	Report on Quality Control Screening Program	X				X				X				X				X		
P-29	Data Summary for Quality Control Program	X				X				X				X				X		
P-30	List of Data Sources for Quality Control Program	X				X				X		X					X			
P-31	Data Collection Procedures for Quality Control Program	X				X				X		X					X			
P-32	Data Collection Instruments for Quality Control Program	X				X				X		X						X		
P-33	Data Analysis Procedures for Quality Control Program	X				X				X		X					X			
P-34	Criteria for Quality Control Program	X			X					X		X						X		
P-35	Reclassification of Existing Collections	X					X		X			X							X	
P-36	Physically Classified Collections Under New Classification Schema	X					X	X				X							X	
P-37	New and Revised Objectives and Measures	X					X	X				X							X	
P-38	Procedural Steps for Sorting the Existing Objectives in Collections	X				X				X		X							X	
P-39	Procedural Steps for Revising the Existing Objectives into New Classification Sets	X				X				X		X							X	
P-40	Tentative New Pragmatic Classification Schema	X					X		X			X							X	
*P-41	Review of Proposed Classification Suggestions	X				X				X				X				X		
P-42	Summary of Data on Actual Use of Collections in Field	X				X				X				X				X		
P-43	Data on Actual Use of Collections in Field	X				X				X				X				X		
P-44	Presently Used Pamphlet on Potential Users of IOX Collections.	X					X	X				X			X					
*P-45	Rationale Statement for American Government Objectives	X					X		X			X						X		
*P-46	Tryout Version of Cognitive Judgement Measures	X					X		X			X						X		
*P-47	In-House Version of Cognitive Judgement Measures	X					X		X			X						X		
*P-48	Rationale for Cognitive Judgement Measures	X					X		X			X					X			
*P-49	Staff Generated Objective Statements for Cognitive Judgement Measures	X					X		X			X						X		
*P-50	Staff Generated Test Items for Cognitive Judgement Measures	X					X		X			X						X		
*P-51	Summary of Data on Usage of Objectives and Measures for Usage Pamphlet	X				X				X				X				X		
*P-52	Quality Control Schema for Tryout Version of Cognitive Objectives	X				X				X		X						X		
*P-53	Quality Control Schema for Tryout Version of Affective Measures	X				X				X		X						X		
*P-54	In-House Version of Sociology Objective Collection	X					X		X			X					X			
*P-55	Data Summary for Affective Measures Quality Control (Item Analysis)	X				X				X				X				X		
*P-56	Data Analysis Procedures for Affective Measures Quality Control	X				X				X		X						X		

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TABLE 7 concluded

Classifications of Output Characteristics

Project Outputs		Output Characteristic[a]																		
		Structure			Function			Level			Character (Products only)				Completion Stage					
No.	Label	p	e	c	ps	m	p	f_1	c	f_2	k	t	i_1	i_2	1	2	3	4	5	6
*P-57	Data Summary for Cognitive Objectives Quality Control (Item Analysis)	X				X				X				X				X		
*P-58	Data Sources for Cognitive Objectives	X				X				X		X						X		
*P-59	Data Gathering Procedures for Cognitive Objectives Quality Control	X				X				X		X						X		
*P-60	Data Compilation Instruments for Cognitive Objectives Quality Control	X				X				X		X						X		
*P-61	Data Analysis Procedures for Cognitive Objective Quality Control	X				X				X		X						X		
*P-62	In-House Version of Attitude Objective Collection	X					X	X				X					X			
*P-63	Quality Control Schema for Sales Version of Cognitive Objectives	X				X				X		X						X		
P-64	Criteria for Revising Sales Versions of Objectives and Measures	X			X					X		X					X			
P-65	Quality Control Schema for Sales Version of Affective Measures	X				X				X		X						X		
Classification Frequencies		65	0	0	3	31	31	14	18	33	0	57	0	8	4	1	8	45	7	0

[a] The specific output characteristics are identified as follows:

Structure

p - product
e - event
c - condition

Function

ps - policy setting
m - management
p - production

Level

f1 - focal
c - component
f2 - facilitating

Character

k - knowledge
t - technology
i1 - implementation
i2 - information

Completion Stage

1 - completed over one year ago
2 - completed 3 to 12 months ago
3 - completed within last 3 mos.
4 - currently in progress
5 - not yet underway
6 - on going (continuous)

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Chapter V: Project Dynamics

Project Focus

When the visiting team was being briefed for this project, the name of the project location, "Instructional Objectives Exchange," led them to the immediate conclusion that this project's primary focus must be diffusion. But, while the work examined during the visit is conducted within the agency that bears that title, the specific proposal under which the work is done does not address diffusion per se.

The dispersal of objectives produced and published is carried out from a separate location that the team did not even visit. The project receives reports of sales from this facility as well as funds. For this reason, the main concern of the project staff is not to achieve diffusion of the products of their labors. Their concern is with the various aspects of producing products for such diffusion.

There is little question that the primary focus of the effort, as well as of the contract, is upon development of quality objectives. The project proposal devotes some space, under purpose 1, to a discussion of the problem of "proselyting." It should be explained that the word applied to objectives, not people, and the proselyting referred to is the persuading of people who already have some objectives and measures of acceptable quality, to surrender them to IOX! The problem seen in the proposal and described by the word "proselyting" was that the staff needed to go out and find teachers willing to part with objectives and measures for use by the Exchange.

The problem of proselyting apparently involved even more than persuasion. Early proselyting efforts revealed virtual nonexistence of any systematic collections. As a result, it became expedient for the project staff to turn their energies toward generating quality objectives and measures, to fill the gaps discovered in the collections they already had.

This change of emphasis made the approach to purposes 2 and 3 of the proposal much easier. Exercising quality control and developing new classification schema, while working principally with collections assembled from outside sources, posed problems typical of such activities associated with heterogeneous collections. When does one change, when does one rewrite, and so forth? Since the original commitment was primarily to circulate what is, while exerting some quality control over what gets circulated, there was an implicit commitment to retain some identity within the objectives and measures collected and circulated.

The transition toward total internal generation of objectives released the operation from this implicit commitment: there is no question of "murdering" somebody else's brainchild.

Context of the Project

At the beginning of the time line of this project, which covered two years, from July 1969 to June 1971, IOX operated within the UCLA context as an activity supported by the Graduate School of Education and the Center for the Study of Evaluation. During the second year the distribution of the collections was put on a private, nonprofit basis and the operation removed from the UCLA campus.

However, the development work in this project, under the proposal submitted at the beginning, continued to be funded by USOE. As stated earlier, the actual mailing of packages is handled at a different location from the one visited in connection with this project.

While the development is, in a sense, inseparable from the distribution or diffusion (which was the reason why we intuitively expected this project to "look like" diffusion), the activity reported on is intensely concerned with development. The diffusion that follows is seen as a measure of the quality or success of this development activity.

Because of this almost mushroom-like development--the rapidly increasing demand for the products of this project--people have tended to do what is needed in response to such demand. In addition to following their own concerns about the direction of the project, an example of this response is the development of the cognitive judgment collection to complement the tolerance attitude collection.

Few of the personnel, except secretarial staff, work full time on this project. In fact some who work on it have zero assigned FTE. They are supported by the Exchange. This is a sort of "fact of life", largely due to the success of the project, (using that word here to cover the Exchange as a whole, rather than merely this development aspect) that enables successful expansion to proceed.

Nature of the Product

A few words are needed to explain what the people on this project see as the nature and function of instructional objectives and in particular of the collections they are developing.

Use of the word "objectives," they feel, is apt to convey to many uninitiated persons an implication of "behavioral," along with whatever implications the combined term "behavioral objectives" may have already acquired for such individuals. Sensitivity to this resistance has been heightened by overt publicity by certain groups, claiming that "behavioral objectives" is a euphemistic term to conceal "brainwashing." Assertions of this nature have been made to project staff on campus, although the asserters admitted never having encountered an "objective."

The concept behind the project's use of the words "instructional objectives" is that the measures may be applied not only to measure the behavior of individual students, but to measure the quality of instruction as well. Effecting desired changes in student behavior through instruction reflects the occurrence of learning. To fulfill this specific purpose, student responses would carry no names and results would be collated to determine the aggregate effect upon a whole class, rather than the effect on individual students.

While that is a rather specific implication within the words "instructional objectives," it need not be an enforced constraint upon the way these collections of objectives can be used. In fact, once a school or person has purchased a collection of objectives, how it gets used is no longer under the control of the agency that constructed the statements and measures. Even if precise instructions were included as part of the test instruments in order to restrict them to specific uses, it is a relatively simple matter to change these and reproduce the same instrument in a different context.

For this reason, the approach adopted by the Exchange and this project is not to specify an exclusive manner of use. Rather, in the paper describing potential uses, a number of possibilities are described. In the booklet that will eventually replace this paper as a more complete use guide more information about possible uses, expected results, and methods of evaluating responses according to the intent of the measurement will be included. These changes will be based on data now being collected and collated.

The project staff are finding that these diversified possibilities for use are aiding considerably in the acceptance of the product. Various people have resisted the use of objectives, of whatever precise type, largely through ignorance about what "objectives" are. Possibly a "brainwashing" connotation still clings.

The objectives and tests can be shown, or even issued, to the parent who does not want his child "brainwashed" so he can try them out at home.

The administrator can also find uses for objectives, for example, as measures of his school's or staff's performance, that put him more centrally in the picture. They would then no longer be some mystic thing that today's teachers have and with which he is out of touch. They can become a meaningful tool for him to measure instructional performance and to aid in making decisions about programs. If the administrator can be put "in the picture" he can find his own uses for them. This proved to be an unanticipated form of optimization that the project staff uncovered.

The collections, at the time of the visit, consisted of two main groups. The previously published collections are mostly cognitive objectives in the various disciplines--the reading, 'riting, 'rithmetic kind of thing--with some affective collections and some psychomotor ones, the latter establishing physical performance to be met. The newer ones currently being worked upon, recently finished, or just being started, take new directions.

One of the published collections handles self-concept. It attempts to measure what the student thinks of himself and of his associates--parents, peers and so forth. Conforming with the notion of the more formal instructional objectives, this can be used to measure the prevalent attitude among students of a class or of a whole school, or possibly as a spot check across one or another kind of grouping.

A more recent collection measures tolerance as an attitude. When the endeavor enters this kind of domain, the question arises as to whether the items measured always represent true objectives. Is absolute tolerance of everything and everybody a viable objective? Because the measures come in packages similar to those used to measure performance it seems inevitable that people will interpret use of such measures both positively and negatively, depending on personal viewpoint.

It could be argued that the tolerance collection lacks a morality base. This possible connotation led to the idea of a judgment collection to measure the cognitive recognition of proper constraints on behavior. While this collection is designated "cognitive" it is really close to becoming a bridge between the affective and cognitive domains. For example, if a child (or for that matter, any person) observes a conflict between persons of obvious differences what does that individual really observe: is he concerned with the issues that form the basis of the conflict, or is his observation influenced by prejudice based on personal conditioning? The judgment collection was developed to assist in restoring or maintaining a balance that unguarded use of the tolerance collection might endanger.

A problem with any objective and measure designed to determine attitudes is in its construction. Often the purpose is to differentiate "correct" and "incorrect" responses. The problem is compounded by the fact that most people (including children) are preconditioned to the notion that any question, any test, must have one correct response and one or more incorrect responses.

Quality Control

This control extends beyond the formulation of the objective statements and corresponding measurement questions. The notion just discussed, that each question must have an "expected" answer, tends to create a difficulty in getting honest, i.e., non-conditioned, responses: what the individual's personal reaction, thought, belief, or deduction is.

One step that has been found quite useful is to avoid the use of any word that connotes "test" and substitute the concept of "survey," supporting this with an attitude that seeks the aid of the participants: that they are helping "us" by letting us know what they think, how they react, etc.

There may be no way to guarantee that these irrelevant factors do not interfere with results. But there are ways to determine if they are doing so, and to arrive at causes. If a questionnaire is too long, for example, the temptation to play the answer-pattern game becomes stronger. It is further reinforced if the student has difficulty understanding the intent of the questions, when his reaction is, "What is he asking me?"

Further positive reliability checks can be run on the objectives and measures. Measures that fail to give consistent results need reexamining. Beyond this, efforts at quality control can use feedback from students and faculty relative to their reactions to the measures. A wide variety of mechanisms for checking quality is used in this project as an aid to quality control.

New Classification Schema

The third commitment of this project is to devise new classification schema. Many questions demonstrate the need for a new way of classifying objectives. Finding a simple way to do all these complicated things presents a problem.

Problems. As the objectives are now presented they come in simple sets, usually organized by traditional subject-matter discipline and by grade level, or some indication of level analogous to grade. As sets they are distinguished between cognitive, psychomotor, and affective. While a new classification scheme may not be discipline free, it is felt that it should break away from the fact-oriented set that use of a discipline traditionally develops. It should also provide the user with alternative paths rather than coercive, single-channel measures.

In thinking about the development of a new classification scheme a first approach that this project took was in the direction of a simplified, computerized access system that would take all the relevant variables and enable the user to select examples of objectives and their attendant measures. The user was to be provided with directions to enable him to construct his own additional measures merely by punching up the desired combinations in a computerized system. This notion was dism[illegible]d as not feasible at this point.

Among cognitive objectives, a categorization scheme could be built around response mode and cognitive level. Another basis for division would be according to user's needs. Various populations use objectives and although no specific analyses had been run at the time of the visit, it was suspected that most users are other than teachers. Various level administrators might use them more than teachers, for example.

All of the available literature on various forms of classification for objectives, instruction, and learning, were carefully studied. The initial step toward a new classification scheme envisioned at the time of the visit was the development of a secondary classification or coding scheme, possibly as a slip-sheet to be inserted in existing sets.

Whatever scheme is finally adopted, it must be applicable across the various fields within education. It must also be a scheme that school people will appreciate, because its success depends on their acceptance.

A further problem with objectives arises from the traditional attitudes with which they are approached, i.e., as absolutes or imperatives. The intent of the objectives already assembled within the Exchange is to provide alternatives, rather than imperatives. A future objective that is seen as vital to any new classification scheme would be to expand available alternatives rather than to restrict them to imperatives.

Another condition that hinders optimum use of objectives is the homogeneity with which they are traditionally used. There is no sensitivity about the domain to which the behavior, resulting from instructional presentation or whatever, should transfer. This becomes little better than the traditional conditioning to "answer questions" with the precise response teacher wants: the kind of response where the student memorizes a statement which may or may not convey any meaning to him. A student may respond "correctly" when presented with the same sentence in which a blank is left for one of the words: he can replace the missing word. This indicates only that he remembers the words, not that he has any appreciation for their meaning.

This is where the notion of item forms (properly used) can be helpful. The objective specifies the parameters of real concern, gives a sample format for question or test item, possibly with six sample items, and thus enables school people to generate their own test items.

Path toward solution. To provide a rationale for the classification scheme eventually identified, the first step will probably be a position paper explaining the tentative pragmatic schema.

From this starting point, procedural steps for sorting existing objectives, as well as for ensuring that their format adequately identifies their individual positions in the schema, will be developed. This will provide the mechanism for a "first round" reclassification.

Next will come procedural steps for revising existing objectives to fit the schema more precisely, and for the generation of new objectives and measures to fill vacant categories made manifest by the classification scheme.

Referring finally to the set of output maps, it will be seen that they overlap, or nest, although they are drawn independently in Figures 3 through 7. The new classification schema will fit onto the quality control arrangement, to provide an even better means of securing quality in all products generated or revised.

Chapter VI: Implications for Training

Common factors in the background of the personnel working on this project were experience in teaching and previous background in writing (behavioral) objectives. This background was coupled with a personal belief in the value of objectives in each instance.

The project is doing several things that "cut new ground"--that have not been done before: particularly in working toward new classification schema and quality control.

The project has included papers to prepare people working within it for the work they must do. This is a quick form of introduction, suited to people who have already shown sufficient interest by "coming aboard." As the generation of objectives with the potential already demonstrated by this project expands in scope other agencies may embark on similar projects. This project will have gained sufficient experience to put together a training package suited for use in preparing personnel for this kind of work.

In a sense, this kind of training is already being embodied into the generation of products issued by this product. Their concern is to provide objectives with specifications for items that will test for those objectives, with examples, to enable teachers to generate their own test items. The original intent of the group was to institute an instructional objectives exchange to make available objectives and measures generated externally.

The main reason that the current phase has changed emphasis to internal generation was the scarcity of such externally generated objectives, or the difficulty in correlating the somewhat randomly distributed samples that they did collect. In short, nobody in the field possesses training to produce what this project is learning to do "the hard way." This led to the development of the procedures now being used within this project to improve quality and correlation.

As the goal of the project is to enable teachers to generate their own test items against the specifications spelled out in the objective statements, a further step will be to systematize, through the newly developing classification schema, the objective statements themselves. This will enable "outsiders" to take the next step. This is, in a sense, a form of training program that will eventually have wide impact.

In addition to the more obvious backgrounds for generating the objectives (a knowledge and some experience in the generation of specific items and their measures), another need on this project is for relatively simple statistical methods. More important than the knowledge of statistical methods, however, is the ability to apply these methods to the determination of validity and reliability of results obtained with the measures as indicative of the objectives they are intended to measure.

Appendix

Appendix: Listing of Output Standards, Tasks, and Enablers

The following is a list of standards, tasks, and enablers for outputs around which interviews were conducted. These statements were extracted from discussions with interviewees and were coded into their respective category sets. The selected code precedes the statement and indicates the following for:

STANDARDS

Code J:	Structure of Standards.
J-1	Standards against which outputs are judged. (output oriented)
J-2	Standards against which processes and/or operations are judged. (process oriented)
Code LM:	Primary Categories of Standards.

TASKS

Code NO:	Clusters of Tasks.

ENABLERS

Code S:	Structure of Enablers.
S-1	Knowledge.
S-2	Skill or ability to perform.
S-3	Sensitivity or awareness.
Code UV:	Primary Categories of Enablers (knowledges, skills, or sensitivities).

The codes associated with these three categories (standards, tasks, enablers) are the same both here in the listing and as previously cited in Chapter III tables.

Outputs P-45 and greater have parenthetical, compound numerals following the major identification numeral (e.g., P-06/P-15). This is explained in Chapter III.

P-03: A New Classification Schema for Behavioral Objectives

STANDARDS:

J	LM	
1	06	School-type people intuitively appreciate the new schema.
1	01	The system includes objectives applicable across subject fields.
1	06	Users appreciate the new materials.
1	08	Obtaining of agreement on the trial schema.
1	05	Generalizability of objectives is adequate.

TASKS:

NO	
01	Read everything that is around pertinent to classification.
05	On basis of user-need classification, sample user population (mostly not classroom teachers) and primary use.
03	Consider steps to classification: first the issue of a slip sheet with existing collections; later reclassified collections, with new objectives generated to fit schema.
05	Try randomly selected samples and classify according to schema.
03	Analyze objectives by natural language--by structure--to see "what falls out".
26	Supervise one or two summer people to verify Gagne's approach.
01	Draw distinctions between approaches of Gagne and Bloom.
02	Write position paper.
04	Write summary statement of alternative measurement procedures.
03	Specify parameters concerned with item forms (implications of various items forms).
03	Consider possibility of using series of item forms with complete specifications instead of objective statement.

ENABLERS:

S	UV	
3	18	Sensitivity to opposition attitude about "objectives."
1	05	Knowledge of Gagne's conceptual work.
3	30	Sensitivity to questions school people would ask.
2	09	Applying subjective judgment in achieving criteria.
2	11	Ability to disregard own bias until empirically tested.

P-20: Technical Paper #3

STANDARDS:

J	LM	
1	07	When I felt it was clear to me I put it in print.
1	30	When I received no negative response of questions from the first two readers I assumed it clear.

TASKS:

NO	
04	Write Technical Paper for new people to help them generate new collection items.
02	Mull over what is necessary to generate new collection items.

ENABLERS:

S	UV	
1	03	Knowledge of definition requirements of behavioral objectives.
2	35	Skill in presenting my ideas in clear form.
3	02	Sensitivity to ignorance or naivete of new employee to certain techniques and methodologies.

P-21: Quality Control Schema for Tryout Version of Collections

STANDARDS :

J	LM	
1	13	Content judged valid by group consensus of the 3-man directorate.
1	24	Level of reading, conceptual sense, are all appropriate to target audience as judged by group consensus.
1	26	Measurement items and objectives match.
1	26	Match between objectives and philosophical statement introducing them.
1	24	Appropriate language, grammar, has been used.

TASKS :

NO	
24	For the cognitive objectives which had excellent structure we judge the definitions in terms of content validity.

03	We define the affective objectives in terms of the instruments we developed to measure them.
01	Reviewed the literature to try to understand what was meant by affective concepts.
24	We determined if the definitions of objectives contained words appropriate to the grade level of the objective (K-12).
22	Have tryout version dittoed.
24	Have measures tried out on kids for readability.
24	Refer to experts for content appropriateness, accuracy.
24	Refer to teachers for suitability for age level.
06	Discover sentences susceptible to misinterpretation.
06	Give document a final hard review.
06	Review introductory qualifying statements.
06	Eliminate any offensive items.
06	Check scoring for accuracy of indications.
06	May make changes even after empirically tested, of wording "bad."
29	Look at all the questions someone might ask, get into a position to be able to defend all that is in the collections.

ENABLERS:

S	UV	
1	23	Knowledge of vocabulary level of students and teachers at various grade levels.
3	02	Sensitivity to teacher's problems such as time pressures etc.

P-26: Quality Control Schema for Preferential Data on Objectives

STANDARDS:

J	LM	
1	13	Consensual judgment that all items are acceptable.
1	05	Utility by teacher.
1	05	The teacher or user can use data and apply as they desire.
1	04	Clarity, based on personal judgment.

TASKS:

NO	
05	We put the objective through preliminary tests.
06	Cull or filter objectives for gross acceptability.
24	Test the objectives by having the different sets of objectives rated by different groups.

06	Confirm validity by comparing the initial objectives with rewarding of objective.
06	Compare rewarded objective with test item, etc.
24	Assure reliability be having everyone working on the task at one time or another.

ENABLERS:

S UV	
1 18	Knowledge of personal judgmental limitations.
3 01	Sensitivity to other points of view.
1 06	Knowledge of teachers' problems.

P-41: Review of Proposed Classification Suggestions

STANDARDS:

J LM	
2 36	People selected were capable of generating alternative hypotheses.
1 05	Utility to teachers of the classification schema.
1 04	Classification schema for objectives simple and easily understood by teachers.
1 11	Classification schema for objectives applicable to ES '70 school.
1 12	Classification schema for objectives contains some classification of behaviors.
1 12	Classification schema for objectives contains some classification of content.

TASKS:

NO	
21	Select consultants capable of reviewing suggestions for classification schema.
06	Consultants write down further suggestions for classification schemes for objectives.
21	Secure services of good consultants.
06	Review for the consultants the classification of objectives schemes which had not worked.
06	Suggest alternatives for classifying objectives.
02	Write position papers to define the dimensions of classification.

ENABLERS:

S	UV	
1	12	Knowledge of expert problem solvers in the field.
3	01	Sensitivity that reputation could attract talent.
3	03	Sensitivity to needs of consultants they want to learn.
3	39	Sensitivity to limits of one day consultancy.
3	14	Be willing to settle for the best results possible rather than the best possible results.
3	40	I feel obligated to follow through on the original request for classification for ES '70 schools.
3	16	That institutional affiliations are not important in judging a person.
3	34	I would consider an unknown person if a known reputable person told me about him.
3	25	Aware of other people's perceptions.

P-45: (P-06/P-15). Rationale Statement for American Government Objectives

STANDARDS:

No information collected under this heading.

TASKS:

NO	
04	Outline terminal-type objectives of conceptual nature.
01	Refer to library, personal authorities on subject.
02	Wrestled with concepts difficult to convey to students, or to test for attainment of objective.

ENABLERS :

S	UV	
I	01	Understanding of subject, e.g., separation of powers, what sovereignty is.

P-46: (P-08/P-13). Tryout Version of Cognitive Judgment Measures

STANDARDS:

No information collected found under this heading.

TASKS:

NO	
22	Have accepted version of measure reproduced in mimeograph or other temporary form.
29	Secure district approval for use of tryout objectives in schools.

ENABLERS:

S	UV	
1	12	Knowing the people necessary to secure approval and exposure.

P-47: (P-08/P-14). Inhouse Version of Cognitive Judgment and Measures

STANDARDS:

J	LM	
2	17	General reaction from students and other participants that "this is a fun test" indicating relaxed attention.
1	26	Relationships between objectives and related test questions validated by a jury of experts.
1	20	Reliability studies conducted between responses reflect adequacy.
2	17	Students very cooperative--like "doing" the tests.

TASKS:

NO	
04	Key test items to the measure for which they are applicable.
04	Produce a complete set of tests based on criteria development included objectives P-48.
05	Run tests with cooperation of local high school continuation school in the community and with student teachers in UCLA.
06	Make revisions based on feedback from tests (what they tell us).

05	Conduct tests with samplings of students in cafeteria of schools.

ENABLERS :

S	UV	
2	23	Ability to convince students and other participants that the tryout is "helping us."

P-48: (P-08/P-15). Rationale for Cognitive Judgment Measures

STANDARDS :

J	LM	
1	19	Rules of logic after Robert Ennis are in evidence.
1	16	Watson-Claser critical thinking best rationale in evidence.
1	06	Whether others on staff and in field "buy" the rationale.
2	15	Interviewee endorsement for the idea made further work possible, encouraged progress.

TASKS :

NO	
02	React with staff about the need for these objectives.
02	Develop logic as basis for "judgment making."
02	Develop number of specific objectives to have comprehensive tests.
33	Decide to include recognition of logically valid statements.
33	Decide to include tests to separate logical ability with and without emotional involvement (using emotionally loaded questions).
04	Include reference to the cognitive judgment collection in cover letter issued with attitude measure collection (Tolerance).
04	Develop rationale for objectives to be included in collection.
03	Suggest "propaganda analysis" as component(s) of collections to establish, e.g., difference between validity and truth.

ENABLERS :

S	UV	
3	31	The need for component as offset to effects of another component.

3	16	Realization of a problem where no value reference exists.
1	06	The need illustrated in the illogical reactions of people.

P-49: (P-08/P-18). Staff-generated Objective Statements for Cognitive Judgment Measures

STANDARDS:

J	LM	
1	19	References used are relevant to intent of these objectives.
1	13	Objective statements approved by staff.

TASKS:

NO	
04	Using standards of logic and morality, generate key items to measure.
06	Test list of key items for completeness.
01	Look up various sources (e.g., in library) on "judgment" (subject).
02	Address question as of form, how to measure "intolerance."
01	Look for definition of "inference" (none satisfactory found).
02	Seek definition from members of Philosophy Department (they could not agree).
02	Consider creating an objective on fallacies (still undecided at time of interview).
04	Choose proposition sets appropriate to student level.
06	Eliminate for time being propositions in perception that require pictorial presentation.
06	Discard irrelevant aspects of judgment, e.g., art.
01	Analyze information to discover if it is relevant to a given problem.

ENABLERS:

S	UV	
2	18	Recognizing logical validity of statements.
1	03	Background in behavioral objectives.
3	42	Enthused with potential of behavioral objectives.
3	43	Finds objective writing a challenge--much harder to formulate than in mathematics.

P-50: (P-08/P-19). Staff-generated Test Items for Cognitive Judgment Measures

STANDARDS:

J	LM	
1	22	Students were able to respond appropriately to inferential test.
1	21	Items selected are those on which the quality of student responses was rated as high.
1	13	Typed up item sets approved by staff.

TASKS:

NO	
04	Generate some test itmes based on standard class logic propositions and on assumption recognition.
04	Work up questions following examples, taking the principles from Robert Ennis.
02	Wrestle with problem of creating test items that are simply stated, unambiguous, yet which require the inference to be made to answer correctly.
05	Ask teachers to report words with which students experience difficulty.

ENABLERS:

S	UV	
2	35	Skill at wording questions so as to determine if objective has been attained, without "cluing" student.

P-51: (P-12/P-29). Summary of Data on Usage of Objectives and Measures for Usage Pamphlet

STANDARDS:

J	LM	
1	22	Effectiveness in achieving acceptance by various classes addressed in this research.

TASKS:

NO	
01	Use Popham's paper (1/70) "Potential Uses of Objectives" as basic starting point.
05	Analyze data on use of attitude measures.
05	Check if attitudes drop off in class of "good" teacher.
05	Determine period of greatest cognitive gain in students.
05	Check effective testing results against state-wide standardized tests.
29	Use observational fundings as inputs to persuade teacher and administration to use objectives.
07	Show teachers how to become students of their own teaching by using objectives.
07	Show principals how to use tests as managerial aid: puts principal "in it."
07	Practice communicating the function of objectives and tests to parents, to offset "brain washing" propaganda.
24	Plan tests to determine effects of letting students know objectives.

ENABLERS:

S	UV	
3	03	Sensitive to needs of various groups: administrators, teachers, students, parents.
3	04	Sensitive to involvement of various groups.

P-52: (P-21/P-24). Quality Control Schema for Tryout Version of Cognitive Objectives

STANDARDS:

J	LM	
1	07	Intuitive feel for whether or not the job was well done.
1	13	Reaction of the writer and other reviewers to the collection was good.
1	06	Teacher comments from field review for the sales version of the collection were good.

TASKS:

NO	
31	Receive a collection of objectives with one test item for each from the colleague who had generated them.
31	Receive a memo of what to look for in the objectives, test items and their interrelationships in the way of review.
24	Read the objectives/test items with memo notes in mind to check quality.
06	Write comments on separate sheets for the writer to review later.
02	Confer with colleagues regarding questions which arise in the review process.
06	Rewrite items for which felt (a) revision was necessary and (b) self was capable regardless of whether actually am.
02	Interact with colleagues on items which seem to be worth discussion as opposed to a written comment.
24	Return the collection and comments to colleagues for review and consideration.
31	Meet to discuss questionable items to insure better understanding and agreement on them.
06	Revise the collection based on comments and discussion for review by a subject area specialist.
31	Carry collection to a subject area spcialist for general review of subject coverage and accuracy.
06	Review and write comments on collection for subject coverage and accuracy.
24	Review comments of subject area specialist for changes necessitated.
06	Update the collection according to comments of subject area person and own judgment.
24	Send a copy to the Project Director or Co-director for final review.
26	Review the completed collection to give approval for printing or a tryout version of the collection.
22	Send the final copy to the typist and print shop facilities for reproduction.
06	Review the collection for suitability with project purpose and write comments.
06	Update the collection as required by Director comments for this tryout version of the collection.
04	Add five to six additional test items for each objective.

ENABLERS:

S	UV	
2	19	Ability to (read an objective and) visualize the domain to which it is applicable so that other test items may be generated within that domain regarding that objective.
2	17	Ability to understand what the person is saying in a stated objective.
3	10	Sensitive to what objectives will be accepted by the Project Director as not being too specific or too general.

2	14	Decent English in order to write objectives/test items.
1	05	Knowledge of what a student at a given grade level can and cannot do.
1	01	Familiarity with a school curriculum so that one can see how the objectives could be adopted into that curriculum.
3	17	Sensitivity to the person who wrote the collection and their work efforts in generating it.
3	02	Sensitivity to the grade level mentality, e.g., 4th graders need things lined up physically so they know where to answer.
3	02	Sensitivity to 4th grade vocabulary.
2	01	Teaching experience in 4th grade.
3	18	Lack of subject area background so can be more objective.
3	01	Considered to be a critical person, sensitive to that about myself.
3	07	Sensitive to "terminal" type objectives.

P-53: (P-21/P-25). Quality Control Schema for Tryout Version of Affective Measures

STANDARDS:

J	LM	
1	09	Feel like have weeded out ambiguities.
1	12	Results from testing for sales version collections show desired ends met.
1	13	Reactions of other reviewers to the collection is positive.

TASKS:

NO	
31	Receive measure from the colleague who generated it for review and comments.
06	Review the items in the measure for ambiguities and grammar, revising on the cards (one item per card).
05	Take the test pretending to be a student who likes school, to see if answers would be positive.
24	Interact with colleagues on results of trial test for suggestions.
01	Review literature provided by staff or found in library to sensitize self to good attitude statements and levels of offensiveness.
02	Go through the items with colleague(s) to look for duplication, etc., and brainstorming for comments.
24	Make piles of good and bad items according to one's own judgment.
06	Reword bad items where doing so might improve the item.

24	Select the best items until a manageable number (100) of items are selected for the measure.
22	Present the cards containing the items and format instructions to the typist for a draft.
24	Give a copy to the Program Director for review.
06	Make any necessary changes in the measure necessitated by the Program Director's comments for the tryout version of the measure.
22	Send the final version to the typist for a final copy of the measure.
04	Put together the various measures of the collections for publication.
04	Write introductory materials for the collection.
22	Send the final version to the reproduction facility for publication.

ENABLERS:

S	UV	
1	03	Knowledge of what makes a good attitudinal measure item from reading in the field: Handbook in Social Psychology, Thurstone, etc.
1	04	Familiarity with attitudinal measures from a social psychology class.
3	02	Sensitivity to age level and capabilities of students.
3	16	Sensitivity to the "value problem" among students from varying backgrounds.
1	08	Know the overall framework of the measure and its boundaries.
3	09	Sensitivity to different possible ways to interpret test items.
2	17	Ability to understand what the person is saying in a test item.
3	27	Sensitivity to what is acceptable to the Project Director.
3	17	Sensitivity to the person who wrote the measure items and their work efforts in generating it.
3	02	Sensitivity to grade level mentality, e.g., 4th graders need things lined up physically so they know where to answer.
3	02	Sensitivity to grade level vocabulary.
1	03	Know how to write test items.

P-54: (P-04/P-14). Inhouse Version of Sociology Objective Collection

STANDARDS:

J	LM	
1	01	Feel field is covered in each area as additional review of

	literature fails to turn up new areas.
1 13	Approval of colleagues, Project Director, subject area specialist.
1 16	Coverage compares favorably with college level materials.
1 07	Objectives don't seem trivial (to me).
1 07	Subjective judgment based on own knowledge of sociology.
1 06	Approval of the objectives by teachers in the field.

TASKS:

NO	
01	Go to curriculum lab at UCLA and check out everything with the name sociology on it.
01	Go through the elementary social studies materials to determine degree of coverage of sociology.
01	Abstract that which seems useful.
04	Write objectives based on the abstractions from literature.
01	Look over another collection as a prototype.
02	Consult with colleagues on whether an objective could be considered terminal or whether it is trivial.
02	Consult with colleagues on appropriateness of an objective for particular grade levels.
24	Take collection of objectives to subject area specialist for comments on subject accuracy and coverage.
06	Read subject area specialist comments and recommendations re. subject coverage and accuracy.
31	Discuss comments with subject area specialist for better understanding.
06	Tally the number of objectives within each sociology area to get an idea of extent of coverage of the areas.
01	Decide how many areas to cover within sociology for grade level and depth of coverage for each area and level.
31	Add areas suggested by subject area specialist.
01	Write down all important topics covered in literature.
01	Reduce topics to be addressed to about five for each sociology area.
04	Select objective to cover each topic in each area.
01	Compare elementary coverage with college coverage and include areas of coverage which feel are relevant but not already covered in objectives.
31	Discuss need for additional materials with colleagues and get a list of sources.
01	Write to prospective sources from discussion and those picked up in search of the literature.
01	Read literature which comes in that is relevant and may contain helpful information.
06	Reduce objectives to about 30 or 35 terminal objectives boiling some down where necessary to maintain coverage.
04	Add a sample test item which tests successful completion of the objective where this has not already been done.
06	Review the collection for general overview before sending to a collegian for first formal review.

24	Send the collection to a collegian to review for a variety of known points for criticism.

ENABLERS:

S	UV	
3	13	Sensitivity to terminiology i.e., what is absolutely essential without turning students off with vocabulary.
1	17	Knowledge of what to do with terminology once essential ones have been selected.
1	01	Knowledge of what books are available in elementary level social studies through search of card catalog and discussion with subject area specialist.
1	01	Knowledge of elementary sociology (introduction to social course).
1	23	Knowledge of level of materials for grade levels of kids.
3	02	Sensitivity to what grade levels can do what.
2	20	Skill in objectivity due to lack of specialization in sociology.
2	18	Common sense to be able to tell whether an item or information would be useful for a kid to know.
2	24	Skill in writing significant objectives, i.e., that cover large bodies of information and at the same time be behavioral and include specifically what you mean.

P-55: (P-27/P-29). Data Summary for Affective Measures Quality Control

STANDARDS:

J	LM	
1	05	The summaries are useful in writing the data report.
1	05	The summaries are useful in punching data for correlation analysis.
1	09	The tally checks show high degree of accuracy.
2	14	All previous steps in the quality control process went well.
1	13	Acceptance of the data report containing the summaries information by the person in charge of the revised sales version quality control for affective measures.
1	07	Graduate students in education do good job of hand tallying.

TASKS:

NO	
21	Meet with volunteers to do tallying to give instructions to them.
21	Train new people according to a tally system developed by colleague.

21 Demonstrate how to punch answer templates from pages in collection booklet.
05 Tally test items until tired.
05 Hand tally intermediate level tests with colleague.
29 Interact with colleague regarding constance of answers and comments written on tests (as instructed).
24 Check every five tests scored by a tallier for accuracy such that 9 of 10 were not off more than one point.
21 Draw a grid to show talliers how the analysis designed to check correlation.
21 Explained to talliers what the data were about and what item discrimination was.
21 Show talliers the actual test they will tally.
06 Perform a variability check on samples of tests.
05 Tally class totals by hand for item discrimination.
05 Write item discrimination totals into a sales version collection beside the particular item for the different classes.

ENABLERS :

S	UV	
1	03	How to hand tally.
2	02	Skill in working with people.
3	21	Sensitivity to accuracy of hand tallies.
3	21	Sensitivity to meaning of item discrimination and correlation analysis/data.
2	19	Skill in organizing.
1	03	Knowledge of the field of attitudinal measures.
1	24	Knowledge of which items are to be tests to score.
1	22	Knowledge how to operate template punch.

P-56: (P-27/P-33). Data Analysis Procedures for Affective Measures Quality Control

STANDARDS :

J	LM	
1	05	The correlation summary useful in writing the data report.
2	14	All previous steps in quality control process went well.
1	13	Acceptance of the data report containing the correlations by the person in charge of the revised sales version quality control for effective measures.

TASKS:

NO	
01	Read the correlation analysis chapter in a book by Project Director.
05	Compute correlations on desk calculator.
31	Ask for and receive instructions for running the desk calculator.
05	Compute correlations on machine. Punch in five scores for machine analyses.
05	Write a list of tests correlated and the correlations from the machine.
04	Type ditto master for correlation summary for reproduction and distribution.

ENABLERS:

S	UV	
1	22	Knowledge how to type a ditto master.
1	22	Knowledge how to run a ditto machine.
1	08	Knowledge which tests were to be correlated from the grid scheme.
1	03	Knowledge of concept of and procedure for correlation analysis.
1	22	Knowledge how to run statistics machine.

P-57: (P-26/P-29). Data Summary for Cognitive Objectives Quality Control

STANDARDS:

J	LM	
1	06	Acceptance by users.
1	05	Utility by teachers.
1	13	Consensus of staff.
1	18	Visually nice.
1	04	Easy to understand.
1	04	Concise.
1	05	Useful.
1	08	Consensus of sampling of people.
1	28	Useful--not too cumbersome--judged by consensus.

TASKS:

NO	
05	We correlated between group ratings.
33	Decide on format of summary in book.

04	Write explanations of groupings and data for each as well as explanation of how it will be presented.
05	Star the objectives, i.e., four stars for excellent, one star for poor, based on rating.
05	Retest an objective each time it is changed.
24	Ask raters "is this clear to. . . ."
31	Show rating results to teachers in classrooms.
24	I restrict myself to a 2-page format.
03	Try different formats for data summaries.

ENABLERS ;

S	UV	
1	02	Knowledges of statistics (simple statistics).
2	19	Ability to organize.
2	20	Ability to think logically.
2	20	Being practical--not esoteric.
2	05	Being in systems analysis techniques.
1	03	Knowledges of testing procedures.
3	04	Interaction with people.
1	06	Knowledge of educational procedures.
1	06	Knowledge of classroom procedures.
1	06	Knowledge of how teachers do in school outside of classroom.
2	14	Writing ability--clarity.
2	26	A skill in searching out new formats.
2	38	Skill in applying knowledge to real world problems.
2	10	Applying statistics to real world situations.

P-58: (P-26/P-30). Data Sources for Cognitive Objectives

STANDARDS :

J	LM	
2	36	The people were selected because I knew them and they were easy to contact.
1	05	Usefulness/simplicity of categories.

TASKS:

NO	
30	As a result of reading Future Shock we included futurists as data sources.

23	I select a council of the future to include four graduate students, three professors, and a housewife.
04	We included questions in questionnaire about community.

ENABLERS:

S	UV	
1	02	Knowledge of educational curriculum theory.
3	18	Sensitivity to opinion that behavorial objective rejected by "humanists."

P-59: (P-26/P-31). Data-gathering Procedures for Cognitive Objectives Quality Control

STANDARDS:

J	LM	
1	03	Time spent in class--if too long, teachers reject.
2	24	We will decide on which method by cost/benefit guess.

TASKS:

NO	
06	Change the objectives number system to a letter system.
06	Change the name from test to survey.
05	Where student responses went 000 (111 or 222) ask them why.
05	Ask students for an essay response about community to obtain vocabulary (word community thinks in) used by that group as well as to determine future categories for that group to be divided by ethnic, economics etc.
05	Ask teachers for an essay response on community and students to determine vocabulary for later IBM type questionnaire.
24	Solicit rating response of futurists.
05	Futurists rate objectives after reading "Future Shock" and pretending they are living in 1980.
03	Generate several alternative ways of operating mail system.
03	Develop methods for collecting data by mail.
05	Try out the methods to see which gave best results (i.e., most returns).
05	Students write down words they do not understand.
29	Obtain permission of the principals to enter the school.
05	Obtain data from other geographical areas through a mail system of collection.
06	Observe the children's action on this mail--data collection procedure to determine reasons for poor return.
24	Confirm with staff adequacy of methods.

ENABLERS :

S	UV	
3	22	Sensitive to reaction of students when principal present in room during data collection.
3	22	We never used the word "test" because it creates anxiety in students.
3	35	We were careful about emphasizing ratings rather than rankings.
3	22	We had to watch out for students going beyond instructions.
2	31	Ability to place myself in position of teacher.
3	02	Sensitivity to fact teachers get large quantities of mail, surveys, etc.

P-60: (P-26/P-32). Data Compilation Instrument for Cognitive Objectives Quality Control

STANDARDS :

J	LM	
1	30	Few Remarks filled in (no response).
1	28	Understandable--clear as judged by past use of raters.
1	22	Inappropriate response patterns are not evident.
1	30	Teacher judgment that instruments are not too long.
1	31	Questions are legal (e.g., race, etc.).
2	24	Cost/Effectiveness of test instrument acceptable.
1	32	Good reputation of test maker.
1	28	Instrument is practical for use with kids.
1	12	Instrument is mailable.
1	12	Instrument is computer convertible.

TASKS :

NO	
04	We write a set of directions to give importance to instrument.
29	We explain a five point scale in instructions.
04	We include a six point scale (include zero) in answer sheet.
04	We rewrite objectives at lower level where appropriate.
30	I went to IBM and asked to look over all of their test instruments.
30	I asked IBM who their competitor was and went there.
01	Determine if test instrument is computer convertible (Optical Scanner, Punch card etc.).
06	Revise questionnaire if (don't know) marked excess.
06	Shorten questionnaire if an appropriate response pattern occurs at end.
33	Decide whether to design or buy test format.
05	We try out different formats.
06	Shorten questionnaire at request of teacher

	at end.
33	Decide whether to design or buy test format.
05	We try out different formats.
06	Shorten questionnaire at request of teacher.

ENABLERS:

S	UV	
3	23	Sensitivity to costs of instruments.
2	31	Ability to place myself in position of teacher.
2	26	Ability to search out new test instruments (visit IBM).
1	03	Knowledge of test instrumentation.
3	41	Inquisitiveness.
1	07	Knowledge of resource availability.

P-61: (P-29/P-33). Data Analysis Procedures for Cognitive Objectives Quality Control

STANDARDS:

J	LM	
1	11	Appropriate statistical procedure for data according to personal judgment.

TASKS:

NO	
05	Compare rating of objectives obtained under different circumstances, e.g., objectives, rewritten objectives, objectives rated with measure as part of rating judgment.
05	We took the rating out and did a ranking on them.
05	We took the ranking and did a correlation on them.
05	We correlate data by paired comparison.
06	We did the Pearson Product Moment correlation.
06	Review the data for completeness.
05	List the characteristics of my data.
04	I found in a statistics book which procedures were appropriate for that data.
01	Conduct library research to find information and paired comparisons.
05	Perform analysis on nonzero numbers in data.

ENABLERS:

S	UV	
1	02	Knowledges of statistics--methods.

1 01	Knowledges of how to calculate.
1 03	Knowledge of defeciences of each statistical method.
3 21	Sensitive to "appropriateness" of procedure to data.
1 03	Good knowledge of experimental design.

P-62: (P-07/P-14). Inhouse Version of Attitude Objectives Collection

STANDARDS :

J LM	
1 13	The criteria for acceptance for content validity arrived at by personal collegial judgment.

TASKS :

NO	
01	We decided to work on self-concept because it was dictated by Title III funds.
01	We reviewed literature to see how others dealt with attitude measures.
31	We held a dozen meetings with selected staff to just talk about how a youngster would feel about these things--just to clarify our own thinking.

ENABLERS :

S UV	
1 24	Knowledge that we were dealing with group data rather than individual data.
1 08	Knowledge of alternative hypotheses.
3 24	Sensitivity to how students can "con" the tester or fake the test.

P-63: (P-22/P-24). Quality Control Schema for Sales Version of Cognitive Objectives

STANDARDS:

J	LM	
2	08	Judgments were accepted from adults--not students.
1	13	Content judged appropriate by control consultants.

TASKS:

NO	
24	Subject matter experts and practicing teachers judge the collection content validity.
24	Content consultants accept or reject items.
24	Teachers review items and write criticisms.
24	Consider alternative methods for increasing returns on questionnaires.
05	Send out questionniare forms to cooperating schools.
05	We sent out data summary forms to cooperating schools.
05	Analyze data returned from cooperating schools.

ENABLERS:

S	UV	
3	02	Sensitivity to teacher's busy schedule.
1	27	Knowledge of potential cooperating schools.
2	23	Skill in obtaining cooperation with schools.

P-66: (P-27/P-23). Rough Draft of Data Report for Revised Sales Version Attitudinal Measure Quality Control

STANDARDS:

J	LM	
1	07	Feel competent at writing.
1	12	Presented the real data.
1	19	Could explain why correlations were what they were.
1	05	Could make recommendations based on the results.
2	14	Confidence in the accuracy and acceptability of all previous quality control steps.
1	13	Acceptance of the data report by the person in charge of the revised sales version quality control of affective measures.
2	14	Felt good because didn't just rely on statistics for results but included intuitions from examining the test program and score sheets themselves.
1	01	Testing design included all grade levels and some variety in socio-economic backgrounds.

TASKS :

NO	
02	Organize ideas according to individual tests so that each would be considered for correlations and item discrimination.
04	Present the correlation and item discrimination data in writing for each test.
05	Determine inferential reasons for high or low correlations based on (a) knowledge of the tests themselves and what they are supposed to measure and (b) statistics which had been computed.
06	List item discrimination problems, if any, for each test.
04	Write reasons for item problems based on (a) letters from teaching, (b) written comments on tests by students, (c) inferences from having helped tally or having revised groups of tests and apparent problems students were having such as misunderstanding instructions.
04	Write a summary to the paper which includes over all inferences: (a) should have had subscale correlations as they are the unit of measure and tests consist of different and varying Nos. of subscales, (b) No one test can measure "school sentiment" or "self concept"; need multiple testing.
06	Reread to insure readability, spelling, etc.
04	Type and Xerox rough draft of the data.
30	Give a copy of the data report to collegian in charge of revised scale version quality control for attitudinal measures.
06	Rewrite some items which were bad and which felt capable of rewriting.

ENABLERS:

S	UV	
1	08	Knowledge of the attitudinal measures tested and what they are supposed to measure and how they do that.
1	03	Knowledge of the field of attitude measurement--course work, reading, on-the-job discussion.
2	14	Skill in writing.
3	21	Sensitive to the data and its meaning.
3	31	Sensitive to the tests and what and how they measure attitudes.
3	22	Sensitive to the kids and how they react and why.
3	21	Sensitive to the meaning of item discrimination and correlation analysis data.
1	24	Knowledge of which tests were used and which were correlated with which.
3	22	Sensitive to student remarks to point out ambiguities and difficulties they would ignore in normal testing.
1	07	Knowledge of the idea of rationale behind the measures as well as the concepts and how to measure it as presented in staff meetings.
1	03	Knowledge how to write good test items and criteria for good test items.
3	06	Sensitive to the value of the report to the project.

CASE PROFILE NO. 11

Written by

Lee Green
Loring Carl

PROJECT TITLE: Relevant Educational Application of Computer Technology

(REACT Project)

AN EDUCATIONAL DEVELOPMENT PROJECT CONCERNED WITH: Developing packages which use the computer as a classroom (or administrative) tool to do only things which cannot be done some simpler, less expensive way . . . computer EXTENDED education.

A PROJECT OF: Northwest Regional Educational Laboratory
400 Lindsay Building, 710 S.W. Second Avenue
Portland, Oregon 97204

This profile has been prepared according to

PROFILE FORMAT No. 3

Three profile formats are represented in this volume. The reader should refer to this number when making use of the reader's GUIDE to the profiles.

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Chapter I: Overview

This overview presents a brief synopsis of the REACT Project as an introduction. This is elaborated by a discussion of the objectives, rationale, and significance of the project and the context in which the project operates.

Synopsis of the Project

Title: Relevant Educational Application of Computer Technology.

Responsible Institution: Northwest Regional Educational Laboratory.

Funding Source: U.S. Office of Education.

Funding Duration: July 1, 1970 to June 31, 1971. (12 months)

Observation Date: September 1970.

Present Stage of Development: Initial-Stage.[1]

RDD&E Focus of Project: Educational development.

Expected Outcomes:

1. Student instructional units.
2. An administrative and teacher training unit.
3. A public relations presentation demonstration package.
4. A revised administrative and teacher training manual.
5. An application package for MIDAS.[2]
6. A plan for the future of the project.
7. A clearinghouse for educational applications for computer technology.

Level of Funding and Duration: Medium. (level 4 of 7 levels)

Agency Setting: Regional educational laboratory.

Staff Summary (Current):	Professional	Support
Total Full Time Equivalency (in man years):	5.25	1.0
Number of Personnel Assigned:	6	1

Professional Specialities of Staff (interviewees only): management; research and development; programmed instruction; curriculum development.

---

[1] Initial-stage under the current funding--developmentally, REACT is in a second phase.

[2] Computer simulation of school administration (see "Index of Outputs").

Objectives, Rationale, and Significance of the Project

The general goals of the Relevant Educational Application of Computer Technology (REACT) Project are to develop, field test, and revise instructional packages which are designed to provide high school administrators, teachers, and students with experience and understanding in using computers.

The primary outputs being developed to reach this end are two field tested and revised instructional systems (developed during a previous project) which include 70 curricular and administrative units. Most of the curricular units are in the fields of mathematics and social science. These packages are designed to familarize administrators and teachers with the use of computers. Additional outputs include a less expensive package designed to provide computer-extended educational experiences for students; and a simulated, computerized, miniature school system (MIDAS) and its administrative procedures. The latter functions with a limited data base to provide experience and aid to persons dealing with resource allocation problems in school administration.

An additional goal is the designing and implementation of a clearinghouse for instructional units developed by agencies throughout the country and designed for use by students in classrooms to provide them with computer-extended education.

REACT is in its second phase. The final products of the first phase were two instructional systems, containing 70 curricular and administrative units, which were aimed at familarizing high school administrators and teachers with the possible uses of the computer in dealing with administrative and classroom problems respectively. These systems were untried and untested. They had been reviewed by experts in computer usage, mathematics, and social science curriculum areas for general validity of the contents . How the units would function when tried in actual instruction of administrators and teachers was unknown.

The present REACT staff, most of whom had been involved in the first phase of the project, were eager for and were committed to intensive testing and revision of these packages. When funds became available in July 1970, tentative plans and contacts had already been made by the project staff for selection of testing sites and development of a comprehensive evaluation design. The REACT staff are convinced of the merit of the computer as a classroom and administrative tool, and the strength of their conviction was displayed by the rapidity with which the project took on a momentum as soon as it was funded.

By the time this project was contacted in September 1970, three test sites using three different modes of presentation of the instruction had been definitely selected and arranged for, and in two cases testing had begun.

Intensive computer-assisted analysis of test questions and responses generated from the 70 instructional units had been arranged with the New York Institute of Technology. Similar evaluation of all the presentation packages, both first phase and new packages (written under the present REACT contract), will be accomplished at various testing sites.

A significant difference between the thrust of this program and programs directed toward computer-assisted instruction (CAI) can be seen in the role of the computer itself. In CAI packages the computer is the teacher; in REACT, the computer is a problem-solving tool. This philosophical difference results in the development of entirely different educational packages. The REACT staff emphasizes that this project is designed to provide computer-extended education with the computer functioning as a fact calculator, a simulation device, or an element in a gaming program. These uses do not have as their emphases the replacement of or partial substitution for human teachers. These have traditionally been the emphases of CAI programs.

REACT instructional packages do not necessitate fundamental changing of educational systems; instead they require the addition of increased numbers of terminals in school systems which possess computers. As more and more school systems turn to computers for manipulation of management information, the introduction of REACT administrative packages becomes increasingly feasible; and as the people in the school system become acquainted with the computer as a tool, the teacher- and student-use packages can make an appearance with little instructional change in the educational system.

Context in Which the Project Operates

Relationship to parent agency. REACT's parent agency is the Northwest Regional Educational Laboratory (NWREL) in Portland, Oregon, a nonprofit corporation supported in part as a regional educational laboratory by funds from the United States Office of Education (USOE). NWREL is committed to encouraging local involvement during the development of its outputs. This attitude is based on the conception of an increased probability of successful adoption of education innovations when the adopters are involved in the development of those innovations. The organizational scheme of the laboratory is indicated in Figure 1.

REACT is a specially funded project which does not depend upon the parent agency for any of its budget. REACT functions as a relatively small, independent program within the structure of the NWREL, and has available to it all existing support services of that agency. These include secretarial and duplication divisions, a media center, and a research and evaluation division which provides advice in research and evaluation design. REACT has responsibilities to the parent agency for meeting formal requirements for filing of evaluation plans, for presentation for review of the project's efforts to the board of directors, and for general accounting and budgeting.

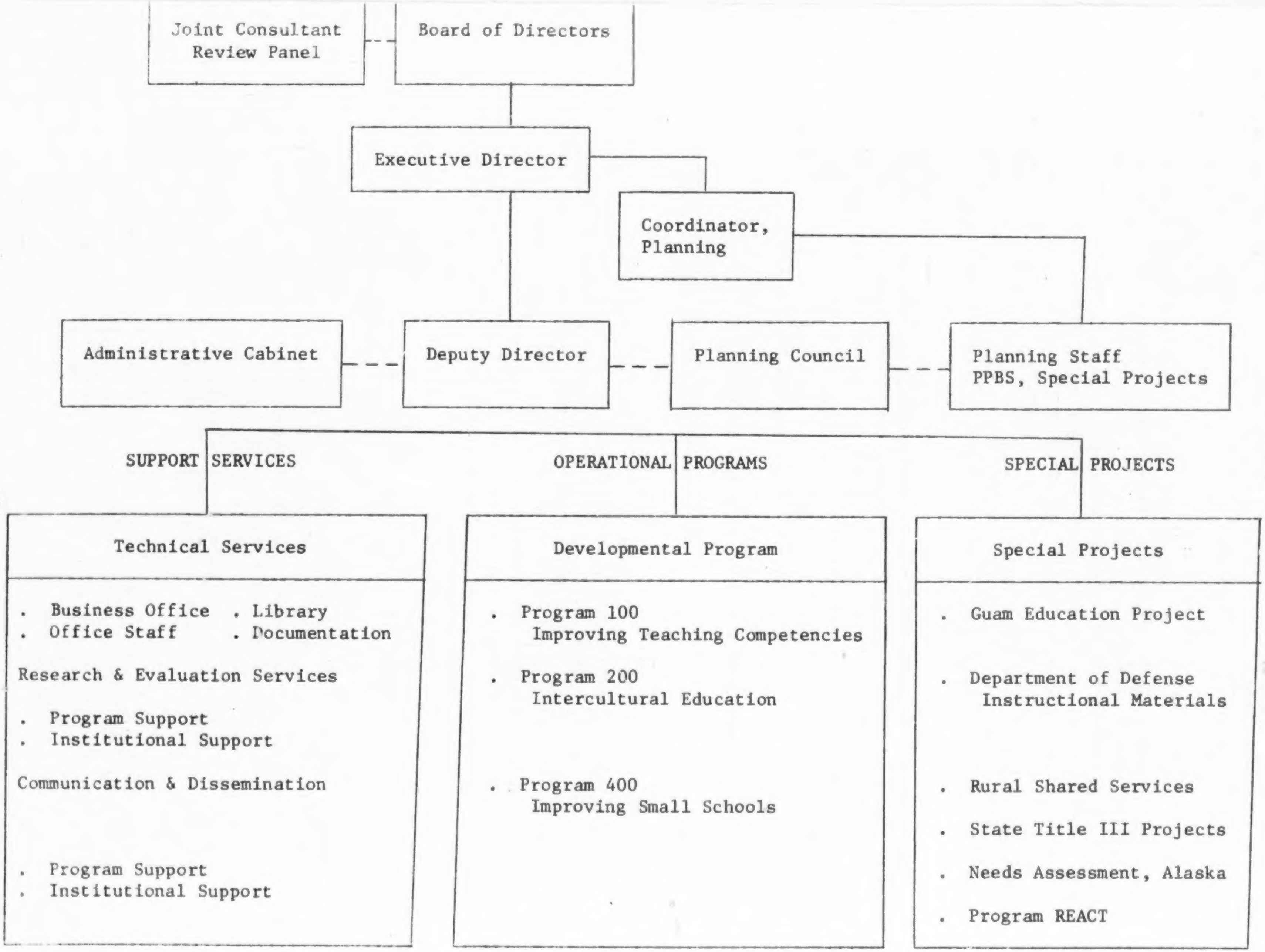
Joint Consultant Review Panel
Board of Directors
Executive Director
Coordinator, Planning
Administrative Cabinet
Deputy Director
Planning Council
Planning Staff PPBS, Special Projects
SUPPORT SERVICES
OPERATIONAL PROGRAMS
SPECIAL PROJECTS
Technical Services
. Business Office
. Office Staff
. Library
. Documentation
Research & Evaluation Services
. Program Support
. Institutional Support
Communication & Dissemination
. Program Support
. Institutional Support
Developmental Program
. Program 100 Improving Teaching Competencies
. Program 200 Intercultural Education
. Program 400 Improving Small Schools
Special Projects
. Guam Education Project
. Department of Defense Instructional Materials
. Rural Shared Services
. State Title III Projects
. Needs Assessment, Alaska
. Program REACT

FIG. 1. Contextual map.

Physical/environmental setting. REACT occupies space within the offices of NWREL, sharing a floor with the computer center. Because of the computer focus of this project, this is clearly an advantage, as there is little or no time and space gap between creation of units for computer usage and inhouse testing of those units in a bench-test fashion. Computer-related problems may be spotted immediately.

The office areas of REACT are open and generally interconnected, with no member working in a room where there is a door to shut. This was indicated as facilitating informal communication, but with a definite expense in terms of desirable working conditions for writing. All of the interviewed staff commented on the difficulty of working under conditions of constant interruption. However, the top three personnel saw the working circumstances as a necessary condition, viewing the stream of constant interruptions as basic to their successful performance of major tasks useful to the project, such as maintaining contact with cooperating agencies and coordinating the philosophy and direction of the two primary training packages.

Chapter II: Parameters of the Project

This chapter contains information about the organizational structure of the REACT Project, its staffing patterns, and the roles and functions served by its personnel. It also provides description of the outputs identified in the study, and illustrates the dependent relationships of these outputs in an output map.

Project Structure

REACT has two major subdivisions functioning independently in terms of activities and decisions, one focusing on administration and the other focusing on teaching. The two coordinators and the Project Director interact extensively in an informal manner to maintain coordination and agreement between these separate subdivisions. The two coordinators have cooperated on a common set of training manuals to be used in the introductory section of both the administrator training package and the teacher training package.

Within the administrator training effort resides the development and implementation of the MIDAS system--a computerized miniature school system with a limited data base which is designed to teach administrators how to use the computer to aid them in solving administrative problems. This system is used as the basis for developing administrator training units. The coordinator of the administrator training package also cooperates with the coordinator of the teacher training package in conducting classes for teachers and administrators. These classes are part of the test pattern for the two outputs.

Two distinct activities in addition to the testing and revision of the teacher training package lie within the teacher training section. These are the development of the newly begun student curriculum units and the establishment of the clearinghouse function. The student units are frequently, but not always, adaptations of material developed for teacher use, and the rationale for the two efforts is similar. The curriculum writer employed in this division of the project works on development of student packages, and is also the coordinator of the clearinghouse at this point in time. The function of the clearinghouse is to collect and coordinate for dissemination existing instructional units developed for the computer. The clearinghouse effort is a logical outgrowth of the work on student packages, since that work involves reviewing units which have been developed by other agencies and deciding upon their suitability for adaptation to the REACT system.

Staff structure. All members of this staff, with the exception of the computer programmer, worked together on a previous project (REACT, Phase 1). They know each other very well, and are highly informal in decision and management processes. The Project Director and coordinators of the two major subdivisions coordinate their thinking about the project on a daily basis. Another advantage accruing to this project from the previous phase is in the quality of advice available to one curriculum writer from her husband. He had been employed on the REACT Project as a mathematician and specialist in computer usage. Actions resulting from the writer's consultations with her husband were cited by several staff members as definitely contributing to the project.

A disadvantage to this project accruing from the familiarity among the staff is that there is no process such as staff meetings to insure interaction between all levels of the project. This has the effect of insulating the top three people from any opinions or concerns of the three other workers except those that arise in one-to-one discussions of the work at hand. There also was little indication in the interviews of interaction between these three workers.

Figure 2 represents the structure of the project relationships existing between the staff members.

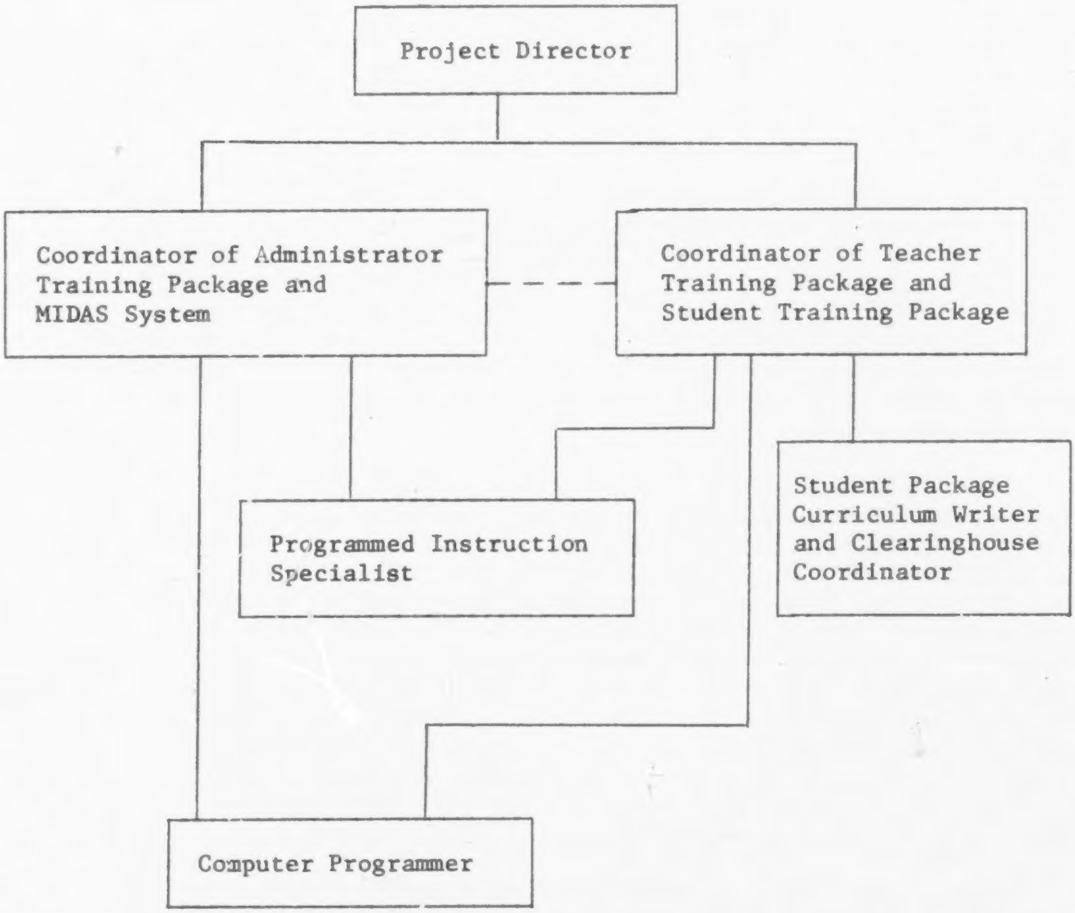
Project Director
Coordinator of Administrator Training Package and MIDAS System
Coordinator of Teacher Training Package and Student Training Package
Programmed Instruction Specialist
Student Package Curriculum Writer and Clearinghouse Coordinator
Computer Programmer

FIG. 2. Project organizational structure.

Project roster. The following staff members were interviewed during the onsite visitation of the interview team.

> Project Director. Assigned .25 full time equivalency (FTE) to this project, he worked on the proposal and was reassigned to the project for its duration when it was funded. He was also director of the first phase of the REACT Project. His responsibilities are administrative and supervisory, and he is primarily responsible for final reporting of this project.
>
> School Administrator Training Package Coordinator. Hired during previous phase of the project, he was reassigned (1.0 FTE) to the project when the current contract was funded. He is responsible for the completion of the administrator package and the MIDAS system. He shares responsibility for the testing design for the project.
>
> Teacher Training Package Coordinator. She is supervisor of the development of the student curriculum units and the establishment of the clearinghouse. She was hired during the previous phase of the project and assigned to the current project at 1.0 FTE. She is responsible for the completion of the teacher training package, and shares responsibility for the testing design of the project.
>
> Curriculum Writer. She was hired (1.0 FTE) for writing student curriculum units at the project's inception. She worked for a short time on the previous phase of the project in a similar capacity.
>
> Programmed Instruction Specialist. Employed temporarily during the previous phase of the project, he rejoined the current effort at its beginning date at 1.0 FTE. He is responsible for development of the writer training process. This process consists of interaction between curriculum writers and specialists in instructional technology.

The following staff member (not interviewed) completes the list of project personnel.

> Computer Programmer. He is employed for the duration of the project at 1.0 FTE.

Outputs Generated

The outputs of work effort that are identified in this study are sorted into three categories: products, events, and conditions. A product is the tangible result of work effort that results in a surviving transportable object. An event is an outcome of work effort that results in the occurrence of an observable transaction or set of behaviors. A condition is the result of work effort that establishes a prerequisite status for production or management within the project.

Index of outputs. The following annotated list describes the outputs confirmed by the onsite interview team as major outputs for the REACT Project. Each output has been arbitrarily assigned an identification number. This number is preceded by a letter, P for a product, E for an event, and C for a condition. Those outputs interviewed around are identified with an asterisk.

*P-01.	Computer-use Instructional Unit for Administrators. A written instructional plan for use in teaching school administrators to operate computers as a tool to enhance performance of their various administrative duties.
*P-02.	Computer-use Instructional Unit for Teachers. A written instructional plan for use in teaching teachers to operate computers as a tool to extend their classroom teaching effort.
*P-03.	Computer-use Instructional Unit for Students. A written instructional plan for use in teaching students to operate computers as a learning tool.
*E-04.	Instructional-unit Writer Training. A series of inhouse training sessions planned to increase the capability of the writers in writing instructional units.
*P-05.	Computer Simulation of School Administration (MIDAS). A minature demonstration computer system of hypothetical school administration. This system includes pupil, personnel, financial, facility, and curriculum data files.
P-06.	Field Testing Design. The written plan for evaluating the various instructional units being produced by the REACT Project.
P-07.	List of Field Test Sites. A refined list of locations which would cooperate in the conduct of field tests for the various REACT outputs.
P-08.	Clearinghouse Operational Plans. A written operational plan for obtaining, classifying, and distributing literature about computer applications in school situations.
P-09.	Student Instructional Units (Application Packages). Written instructional plans to assist students in learning subject matter by employing the computer as an aid or tool.
*P-10.	Administrative and Teacher Training Unit (Application Package). A written training manual common to both the adminstrator and the teacher. This unit suggests ways that administrators and teachers could enhance their work by employing computers.
P-11.	Revised Field Test (Evaluation Plan). An ongoing and formalized version of P-06. This plan is a requirement of the NWREL.

E-12. Assessment of Progress. An ongoing quality control effort. The project's staff considers this to be an informal but very essential management tool.

P-14. Public Relations Presentation/Demonstration Package. A formal demonstration program designed to show the possibilities of computer application for students, teachers, and administrators.

P-16. Testing System for Student Packages. A written practical set of procedures for testing the student packages.

P-17. Revised Administrator and Teacher Training Packages (Training Manual). A finalized, complete, and published training manual for administrators and teachers.

P-18. Application Package for MIDAS. A complete training package for school administrators to make use of the miniature school administration demonstration.

P-19. List of Products for Clearinghouse A constantly growing list of literature about applications of computers for extending classroom instruction.

*P-20. Plan for Future of Project. A proposal for the continuation of the REACT Project.

*C-21. Capability in Staff. A condition deemed essential by the Director of the project in light of his management style.

*C-22. Managed Money. A management condition deemed essential by the Director of the project in the conduct of the REACT Project.

*P-23. Clearinghouse for Educational Applications of Computer Technology. The written description of the clearinghouse activity which could be conducted on a commercial basis.

*E-24. Modification of Computer Program. The event of modifying or changing computer programs to accomplish their intended purposes.

These products, events, and conditions were identified from the REACT Project proposal, the project reports, and the interviews conducted on site.

Output map. Figure 2 is a graphic illustration of products, events, and conditions as identified for Project REACT. The figure attempts to represent the dependent relationship of one output to another. It should be noted that this schematic does not necessarily represent output development in relation to time. It only represents the dependent relationship between outputs.

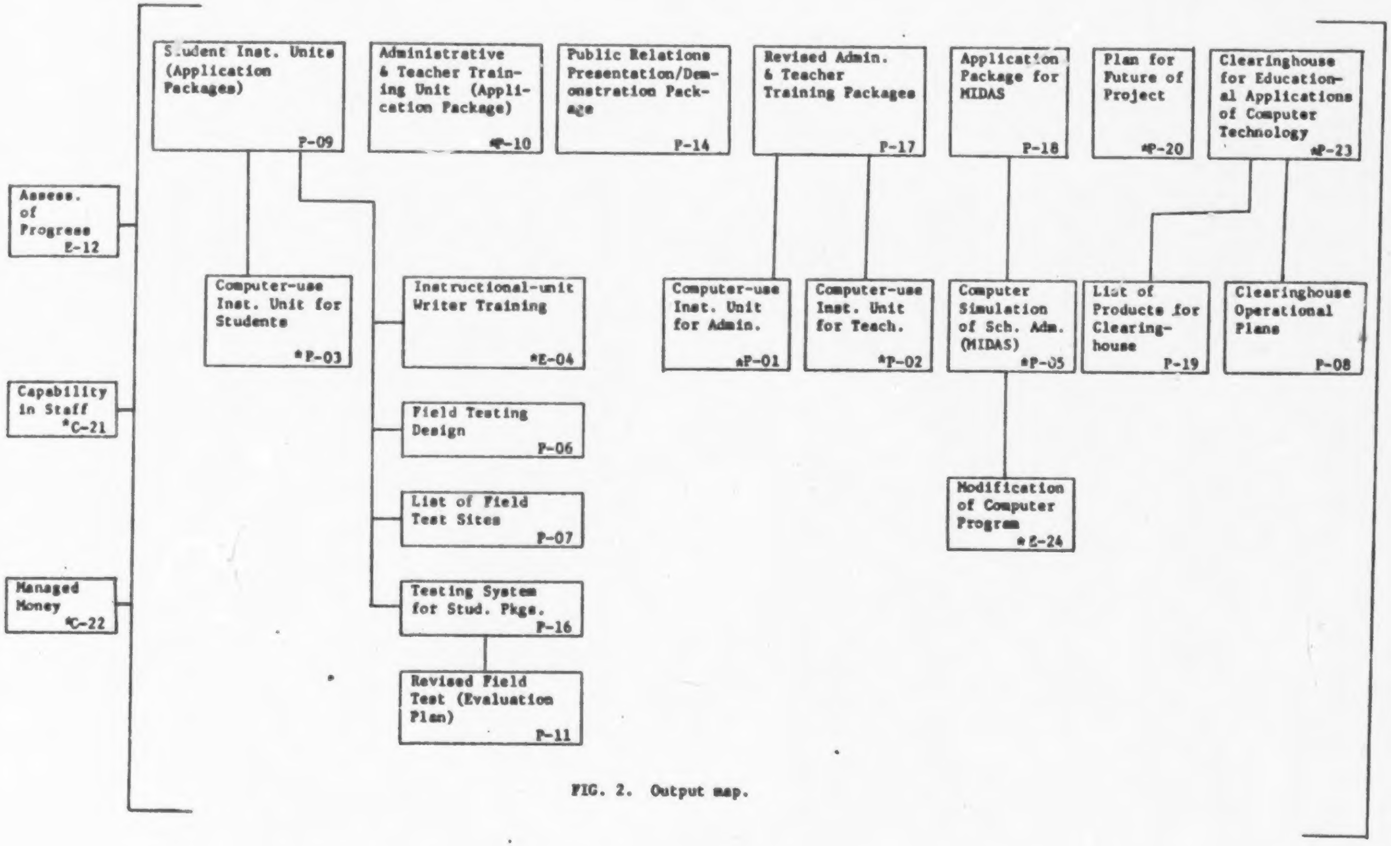
Assess. of Progress E-12
Capability in Staff *C-21
Managed Money *C-22
Student Inst. Units (Application Packages) P-09
Administrative & Teacher Training Unit (Application Package) *P-10
Public Relations Presentation/Demonstration Package P-14
Revised Admin. & Teacher Training Packages P-17
Application Package for MIDAS P-18
Plan for Future of Project *P-20
Clearinghouse for Educational Applications of Computer Technology *P-23
Computer-use Inst. Unit for Students *P-03
Instructional-unit Writer Training *E-04
Field Testing Design P-06
List of Field Test Sites P-07
Testing System for Stud. Pkgs. P-16
Revised Field Test (Evaluation Plan) P-11
Computer-use Inst. Unit for Admin. *P-01
Computer-use Inst. Unit for Teach. *P-02
Computer Simulation of Sch. Adm. (MIDAS) *P-05
Modification of Computer Program *E-24
List of Products for Clearinghouse P-19
Clearinghouse Operational Plans P-08

FIG. 2. Output map.

Chapter III: Summary of the Data

The tables included in this chapter each summarize a category of data obtained in relation to the various outputs identified for the REACT Project. The column labeled "Project Outputs" identifies the outputs of the project which are appropriate to that table. (Only those outputs for which data were obtained during the interviews with staff are included in a table. Consequently, the output listing will vary with each table.) The numbers accompanying each output (e.g., P-01) are identifiers which are constant throughout this project, and can be used in referring to the raw data statements relating to that output (see the Appendix).

The categories of data shown in the tables are the standards by which the satisfactory completion of the output are judged, the tasks required to generate an output meeting those standards, and the enablers (knowledges, skills, sensitivities) which facilitate the carrying out of those tasks. Within each of these categories is found a list of descriptive labels which are representative of interviewee statements (raw data). In the process of reducing raw data, narrative interviewee statements were first linked to one of the above categories, then classified by means of a number code under the most representative descriptive label. Each table provides the frequency with which interviewees cited specific statements (represented by the descriptive labels) of each category.[3]

Standards Held for Outputs

Table 1 presents the standards held for the acceptability of each output which was a subject of interview. Within this outputs standards table there were a total of 30 narrative statements of standards made by interviewees. Though these were made in relation to nine project outputs, 26 bear on primary products of the project. This reflects the current project emphasis on the production of products. The major standards used are shown to be "appropriateness of design" and "goal attainment". The frequency of use of the standard, "acceptance by others," reflects the project policy of cross checking colleagues' work. The computer-use instructional unit for students was subjected to by far the widest range and greatest number of standards.

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[3] If the reader is interested in the narrative statements of the interviewees, these can be found in the Appendix. To locate the narrative statement for any given category, first note the output and its identification number in the table. Second, note that each descriptive label within a given category has a distinct number or code. Turn to the Appendix and locate the output. Under the output locate the category label or heading (standard, task, or enabler) and pinpoint the number or numbers (depending on frequency cited) of the descriptive label which appeared in the table. The statement in the Appendix opposite this number is the original narrative statement from an interviewee and is only represented in the table by the descriptive label and its number coding.

TABLE 1

Output Standards Cited for Each Output Analyzed

Project Outputs No. Label	Primary Categories of Standards for Outputs (Category code no. and label for coding set J-1) 01 Completeness of content	04 Communication and clarity	05 Utility or value	06 Acceptance by users	07 Personal satisfaction	09 Lack of errors/discrepancies	11 Appropriate design/content	12 Goal attainment	13 Acceptance by others (in proj)	14 Acceptance by sponsor	22 Functions as planned	28 Operable by others	30 Lack of negative feedback	Output Totals
P-01 Computer-use Instructional Unit for Administrators				1	1			1						3
P-02 Computer-use Instructional Unit for Teachers			1						1				1	3
P-03 Computer-use Instructional Unit for Students	1	1			1	2	4	2	1			1		13
P-05 Computer Simulation of School Administration (MIDAS)								2						2
P-10 Adm. & Teacher Training Unit				1	1			1						3
P-20 Plan for Future of Project									1	1				2
C-22 Managed Money									1					1
P-23 Clearinghouse for Educational Applications of Computer Technology							2							2
E-24 Modification of Computer Program											1			1
Category Totals	1	1	1	2	3	2	6	6	4	1	1	1	1	30

Table 2 presents the standards used for judging the acceptability of management activities related to project outputs. (Process standards--the acceptability of the performance of processes and operations.)

Twelve process standards were cited in narrative interviewee statements. The majority of these applied to having a condition of capability among the staff members. The major standards applied to judging capability in staff are shown to be: "values and objectives match" and "acceptable level of output."

Tasks Pertaining to Output Attainment

Table 3 presents the tasks performed in the accomplishment of those project outputs that were the subject of interviews. Interviewees made 159 narrative task statements. Of these, the tasks cited primarily are "producing kinds" of tasks, 90 of the 159 cited. "Managing kinds" of efforts were cited 69 times.

The table indicates that the current major effort is in production with a major concern in the area of operating in an accountable manner. The primary products currently being emphasized are the computer-use instructional units. The major management concern is a condition of high capability in staff.

Enablers Pertaining to Output Attainment

There were 30 narrative statements of required knowledge made by REACT interviewees. Of particular note in Table 4 is the requirement for knowledge of technical subjects (primarily computers, in this case) and a knowledge of the state of computer applications in education as evidenced by the items coded to "Project variables, external."

In Table 5, which lists the skills required for accomplishing the project outputs, narrative statements of interviewees did not indicate major emphasis in any particular skill area. This is somewhat surprising when considered in light of the previous table showing a need for technical knowledge. However, the broad range of skills cited and their almost equal emphasis should be noted.

Within the 41 sensitivities (Table 6) cited by interviewees, as being required for the accomplishment of project outputs, the only emphases appear to be a sensitivity to the "needs of self/others" and a sensitivity to "existing value systems." The interviews showed the respondents to be quite aware of the possible reluctance of school systems to change their current modes of teaching and administering to a mode employing computers. However, the staff was enthusiastic in their stated belief that their employment of computers could meet many of the needs of the target audience.

TABLE 2

Process Standards Cited for Each Output Analyzed

Project Outputs		Primary Categories of Standards for Processes (Category code no. and label for coding set J-2)								
No.	Label	04 Deadlines are met	05 Acceptable level of output	13 Work conducted w/in budget	21 Follow-on proposals are funded	26 Values and objectives match	31 Overtime worked voluntarily	34 Impact of effort, favorable	42 Revision yields improvement	Output Totals
E-04	Instructional-unit Writer Training		1							1
P-05	Computer Simulation of School Administration							1		1
P-20	Plan for Future of Project				1					1
C-21	Capability in Staff	1	2			2	1			6
C-22	Managed Money			2						2
E-24	Modification of Computer Program								1	1
Category Totals		1	3	2	1	2	1	1	1	12

TABLE 3

Tasks Cited for Each Output Analyzed

Project Outputs No. Label	01 Clarifying problem addressed	02 Formulating objectives	03 Designing the output	04 Producing the output	05 Collecting /Processing data	06 Assessing the output quality	07 Diffusing the output	21 Procuring professional staff	22 Effecting accountability	23 Procuring systems/services	24 Effecting quality control	25 Maintaining job satisfaction	26 Facilitating growth of staff	29 Facilitating relationships	31 Diffusing info within project	32 Diffusing info beyond project	33 Effecting decision mechanisms	Output Totals
	Clusters of Tasks (Cluster code no. and label for coding set MO)																	
P-01 Computer-use Instructional Unit for Administrators	4	2	3	4	3	5			1	1				2	1			26
P-02 Computer-use Instructional Unit for Teachers	1		2	2	1	2			1		1							10
P-03 Computer-use Instructional Unit for Students	3	3	2	10	3	2			1			1					2	27
E-04 Instructional-unit Writer Training					3						2		2	3				10
P-05 Computer Simulation of School Administration	1	2	3				1				1				3	1		12
P-10 Adm. & Teacher Training Unit	1	4		2		3			1					1				12
P-20 Plan for Future of Project	1	3		4		1		1	3	2	1					1		17
C-21 Capability in Staff	1							10	2	1	1	4	2	2	1			24
C-22 Managed Money									9						1			10
P-23 Clearinghouse for Educational Applications of Computer Technology	2		1	1						1	2							7
E-24 Modification of Computer Program	1				1	2												4
Cluster Totals	15	14	11	23	11	15	1	11	18	5	8	5	4	8	6	2	2	159

TABLE 4

Enabling Knowledges Cited for Each Output Analyzed

Project Outputs No. Label	01 Standard school subjects	04 Technical/professional topics	05 Project focus topics, external	06 Project variables, external	11 Fiscal matters	12 Resources: personnel	13 Resources: money	22 Use of equipment/systems	27 Potential field settings	Output Totals
	Primary Categories of Enabling Knowledges (Category code no. and label for coding set S-1)									
P-01 Computer-use Instructional Unit for Administrators		2								2
P-02 Computer-use Instructional Unit for Teachers	1	2	1	4						8
P-03 Computer-use Instructional Unit for Students	1									1
E-04 Instructional-unit Writer Training		2								2
P-05 Computer Simulation of School Administration			1	1						2
P-10 Adm. & Teacher Training Unit		1		1						2
P-20 Plan for Future of Project				1		2			1	4
C-21 Capability in Staff						2				2
C-22 Managed Money					2		1			3
E-24 Modification of Computer Program		1						3		4
Category Totals	2	8	2	7	2	4	1	3	1	30

TABLE 5

Enabling Skills Cited for Each Output Analyzed

Project Outputs		Primary Categories of Enabling Skills (Category code no. and label for coding set S-2)																						
No.	Label	01 Teaching	02 Facilitating people interact	06 Programming subject matter	10 Analytical data handling	11 Self-Discipline	14 Writing	15 Presenting orally	17 Interpreting language	18 Finding fits/integrating	20 Exercising judgement	22 Estimating expenses/resources	23 Persuading/justifying	24 Explicating goals/procedures	26 Locating/maintaining info	27 Using equipment/systems	29 Getting others to perform	32 Identifying/correcting errors	35 Communicating clearly	37 Assessing skills/potential	38 Using resources effectively	48 Establishing credibility	49 Interacting productively	Output Totals
P-01	Computer-use Instructional Unit for Administrators						1	1											1	1			2	6
P-02	Computer-use Instructional Unit for Teachers	1		2			1		1	2			1				1	1		1				11
P-03	Computer-use Instructional Unit for Students	1										1												2
E-04	Instructional-unit Writer Training			1	1									1										3
P-05	Computer Simulation of School Administration					1					1													2
P-10	Adm. & Teacher Training Unit						1	1											1				1	4
P-20	Plan for Future of Project																			1				1
C-21	Capability in Staff		1												2					1		1		5
C-22	Managed Money											1									2			3
E-24	Modification of Computer Program															1								1
Category Totals		2	1	3	1	1	3	2	1	2	1	2	1	1	2	1	1	1	2	4	2	1	3	38

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TABLE 6

Enabling Sensitivities Cited for Each Output Analyzed

Project Outputs No. Label	01 Values of self & others	02 Capabilities and limitations	03 Needs of self and others	08 Worth in objectives	09 Awareness of alternatives	16 Existing value systems	20 Unstated obligations	22 Responses of target audiences	23 Cost/benefit factors	27 Acceptability of output	31 Nature/scope of outputs	33 Need for excellence in work	37 Willingness to d[illegible]gate	38 Emerging directions	40 Contractual/stated obligation	47 Willingness to work as needed	50 Intellectual openness	52 Awareness of staff affect	53 Creative	57 Deadlines	58 Willingness to support staff	Output Totals
	Primary Categories of Enabling Sensitivities (Category code no. and label for coding act S-3)																					
P-01 Computer-use Instructional Unit for Administrators		1	1			1	1															4
P-02 Computer-use Instructional Unit for Teachers			1	1	1				1							1		1				6
P-03 Computer-use Instructional Unit for Students	1		1					1		1	1						1					6
P-05 Computer Simulation of School Administration		1			1	1	1					1							1			6
P-10 Adm. & Teacher Training Unit		1	2			1	1															5
P-20 Plan for Future of Project						3														1		5
C-21 Capability in Staff		1	2										1	1							1	6
C-22 Managed Money									2				1		1							4
Category Totals	1	4	7	1	2	6	3	1	3	1	1	1	2	1	1	1	1	1	1	1	1	41

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Chapter IV: Supplementary Data

Included in this chapter are data about output classification and interrelationships within the project, the backgrounds of project personnel, and the support resources of the project.

Classifications of Output Characteristics

Outputs may be categorized in terms of a number of variables. Among them are (*a*) Structure (product, event, or condition), (*b*) Function (policy setting, management, or production), (*c*) Level (focal, component, or facilitating), (*d*) Character (knowledge, technology, implementation, or information), and (*e*) Stage of completion. These five schema are represented in Table 7 for each project output identified, with frequencies summarized for each category.

Summary of Staff Backgrounds

Personnel data were obtained from four of the six professional staff. Two have doctoral degrees and two have bachelor's degrees The Director has been associated with the project (including the preceding Phase 1) for 25 months, with the remainder of the staff varying from 9 to 17 months.

Of the four responding professional staff members, one indicated seven years of previous educational research and development experience, one indicated four years, one indicated two years, and one indicated no previous educational R & D experience. However, this last respondent indicated seven years of R & D experience in fields other than education. Prior experience in educational administration was listed at 10 years for one, four years for two, and none for the fourth staff member. Again, however, this last respondent indicated 14 years of administrative experience outside of the educational realm.

The Director indicated that he considered his knowledge of "how to work with people" as a primary asset. His most important skills were cited as "personnel assignment" and "contract negotiating." Primary knowledges listed by other staff members included: "general knowledge of public schools," "computer technology," "curriculum development techniques," and "instructional technology as developed in industry." All respondents indicated that interpersonal skills were mandatory, as were writing and speaking skills. Two of the respondents indicated a need for being sensitive to the problems of teachers, administrators, and students.

TABLE 7

Classifications of Output Characteristics

Project Outputs		Output Characteristic[a]																		
		Structure			Function			Level			Character (Products only)				Completion Stage					
No.	Label	p	e	c	ps	m	p	f_1	c	f_2	k	t	i_1	i_2	1	2	3	4	5	6
*P-01	Computer Use Instructional Unit for Administrators	X					X		X			X				X				
*P-02	Computer Use Instructional Unit for Teachers	X					X		X			X				X				
*P-03	Computer Use Instructional Unit for Students	X					X		X			X				X				
*E-04	Instructional Unit Writer Training		X			X				X										X
*P-05	Computer Simulation of School Administration (MIDAS)	X					X		X			X						X		
P-06	Field Testing Design	X				X				X		X				X				
P-07	List of Field Test Sites	X				X				X		X						X		
P-08	Clearinghouse Operational Plans	X				X				X		X						X		
P-09	Three Student Instructional Units (Application pkgs.)	X					X	X				X						X		
*P-10	Administrator and teacher training unit (Application pkg.)	X					X	X				X						X		
P-11	Revised Field Test (Eval.) Plan	X				X				X		X					X			
E-12	Assessment of Progress		X			X				X										X
P-14	P.R. Presentation Demonstration pkg.	X				X		X				X						X		
P-16	Testing System for Student Pkgs.	X				X				X		X							X	
P-17	Revised Administrator and Teacher Training Pkgs. (Training Manual)	X					X	X				X						X		
P-18	Application Package for MIDAS	X					X	X				X							X	
P-19	List of Products for Clearinghouse	X					X		X			X						X		
P-20	Plan for Future of Project	X			X			X				X						X		
*C-21	Capability in Staff			X		X				X										X
*C-22	Managed Money			X		X				X										X
*P-23	Clearinghouse for Educational Applications of Computer Technology	X					X	X				X						X		
*E-24	Modification of Computer Program		X				X			X								X		
Classification Frequencies		17	3	2	1	10	11	7	5	10	0	17	0	0	0	4	1	11	2	4

[a] The specific output characteristics are identified as follows:

Structure

p - product
e - event
c - condition

Function

ps - policy setting
m - management
p - production

Level

f_1 - focal
c - component
f_2 - facilitating

Character

k - knowledge
t - technology
i_1 - implementation
i_2 - information

Completion Stage

1 - completed over one year ago
2 - completed 3 to 12 months ago
3 - completed within last 3 mos.
4 - currently in progress
5 - not yet underway
6 - on going (continuous)

Support Resources and Equipment

Those support resources used by the personnel interviewed and seen by them as essential to the project are as follows:

Typing.
Stenographic services.
Computer programming.
Graphics.
Printing.
Library Research.

The support equipment required by the project staff included:

Dictating equipment.
Calculators.
Key-punch machines.
Remote computer terminal.
Onsite computer.
Photographic equipment.
Card sort machine.
Video tape equipment.
Duplication machines.

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Chapter V: Project Dynamics

REACT is a small, nearly autonomous organization working within the overall context of NWREL. Its professional staff of six has been carefully selected to provide a highly qualified, compatible working team. The purpose of this chapter is to show the manner in which this team performs.

Management and Communication Processes

The Project Director manages the REACT operation in a rather informal style. His functions in the project prevent him from constantly overseeing staff work. His stated expertise lies (to a great extent) in the areas of staff selection and assignment and in contract negotiating. His work requires frequent travel and constant interpersonal relations with and for the parent agency and with outside agencies. In filling this type of role, he becomes aware of personnel and their qualifications throughout various areas of expertise in which he is interested. He further makes a point of being aware of promising students in various schools throughout the country which have an earned reputation of producing highly qualified graduates.

The knowledge he thus gains allows him to obtain staff members with the expertise he requires. The Director emphasized, however, that such staff selection and hiring can only be done within the bounds of professional ethics.

Because of his management style, the Director requires staff that not only are well qualified in professional and technical areas, but are capable of accepting the responsibility of being the final approving authorities for work done by themselves or under their direction.

The Director's management style is one of delegating both responsibility and authority, retaining for himself only the authority to act as arbitrator in settling disputes. In this way he can act as a team member, bringing his expertise for negotiation into play to provide facilities, equipment, and working conditions which will enhance the operation.

He operates with a minimum of policy restrictions placed upon his staff. For example, he does not rigidly enforce set working hours. He expresses the belief that conscientious people who are dedicated to their work will frequently put in more than their required time to complete work if given some freedom in their working hours. In some cases this freedom may conflict with agency policies. In a case of this sort, he acts as buffer or go-between for his staff.

The Director keeps himself well aware of the project status by maintaining an open-door policy. The entire staff works on a first-name basis and reports their progress almost daily.

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Interrelationships Among Project Staff

Each staff member has his own area of expertise. Since each was hired on the basis of that expertise there is an obvious air of respect evidenced between them. Though no stated policy to this effect was found, there appears to be a custom among the staff members of asking each other to critique their work. This action serves a coordination function as well as providing input from various points of view.

Though staff meetings are occasionally called by the director to discuss major efforts requiring input from all staff, a preferred method is a frequent informal "get-together" over lunch.

Two or more staff members frequently will voluntarily combine their skill and knowledge to accomplish a required task. For example, a presentation to the board of directors of the NWREL was scheduled. Two of the staff cooperated to prepare and present a demonstration on the current status of the REACT Project. The logistic and presentation problems were handled as a cooperative venture. This particular presentation was made during the Director's absence.

Interrelationships Between Project and Parent Agency

Though a project of NWREL, the REACT Project operates in a rather autonomous fashion. The project staff (with the exception of the Director) is committed full time to this project. This autonomy of operation may, in part, be due to the fact that the project is specially funded and does not depend upon the Laboratory for any of its budget. The REACT Project, however, is conducted as a NWREL project and as such complies with NWREL policies.

The future plans for the REACT Project include the use of the marketing facilities of the Laboratory. Project staff members cooperate in the preparation and dissemination of promotional materials.

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Chapter VI: Implications for Training

Doctoral level training was not seen by the staff of this project as having any other than political value, but that element was seen as essential. The preparation most often mentioned as actually useful to the performance of the tasks of this project was general experience in the fields of public school education and administration, and computer technology. The more varied and responsible the experience, the more utility it was seen as providing. The implication drawn from this data is that real life (or simulated) experience in normal working conditions should be a major integrating component of a training program for persons intending to do work similar in nature to that involved in this project.

Experience (real or simulated) as mentioned above, coupled with some specific items cited by individual staff members, could be combined into project simulation. One staff member noted that he felt a deficiency in the area of knowledge of funding sources. Another identified proposal writing. Still another stated that technical details of computer use was an area in which he had to do considerable outside study. Putting these items together into a single simulated situation appears to be a distinct possibility. For example small, short-term developmental projects could be attacked as a small class effort. The proposal could be cooperatively written, with funding obtained and practical work experience gained as a functioning team.

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Appendix: Listing of Output Standards, Tasks, and Enablers

The following is a list of standards, tasks, and enablers for outputs around which interviews were conducted. These statements were extracted from discussions with interviewees and were coded into their respective category sets. The selected code precedes the statement and indicates the following for:

STANDARDS

Code J: Structure of Standards.

J-1 Standards against which outputs are judged. (output oriented)

J-2 Standards against which processes and/or operations are judged. (process oriented)

Code LM: Primary categories for Standards.

TASKS

Code NO: Clusters of Tasks.

ENABLERS

Code S: Structure of Enablers.

S-1 Knowledge.

S-2 Skill or ability to perform.

S-3 Sensitivity or awareness.

Code UV: Primary Categories of Enablers (knowledges, skills, or sensitivities).

The codes associated with these three categories (standards, tasks, enablers) are the same both here in the listing and as previously cited in Chapter III tables.

Each of the analyzed outputs is cited below within a rectangular box. Listed under each are the interview statements relevant to that output.

E-04: Instructional-unit Writer Training

STANDARDS:

J	LM	
2	05	The writer or trainee produces an instructional instrument that reliably teaches, as evidenced by the test scores in a field test of the instrument.

TASKS:

NO	
29	Have trainee write a short instructional sequence based on a concept.
24	Read short instructional sequence for clarity in order of presentation.
26	Discuss with trainee what parts of instructional sequence he has written that are not acceptable.
29	Have trainee rewrite instructional sequence using hints prescribed.
26	Repeat discussions and rewriting of the short instructional sequence until it is judged acceptable.
05	Administer trainee's short instructional sequence to one or two naive persons in the field.
05	Evaluate ability of short instructional sequence to teach by testing the field subjects using the test develped by the subject area expert.
24	Modify the short instructional sequence from experience with field subjects till it is effective (instructs) as measured by the test.
05	Administer modified instructional sequence to 5 to 10 new subjects to validate its teaching ability.
29	Have trainee repeat instructional program writing training process many times on different subjects till trainee reaches an acceptable level of writing skill.

ENABLERS:

S	UV	
1	04	Know techniques of behavior change or behavior shaping.
1	04	Knowledge of the area of applied instructional technology.
2	06	Skill in the application of program learning techniques to instruction.
2	24	Skill in writing behavioral objectives.
2	10	Skill in analyzing the effectiveness of items in an instructional sequence against a test or evaluation measure.

P-02: Computer-use Instructional Unit for Teachers

STANDARDS:

J	LM	
1	05	Usability of units in terms of project philosophy.
1	13	Consensus of writer and supervisor.
1	30	No negative feedback.

TASKS:

NO	
01	Define philosophy for computer-extended instruction.
03	Select areas within a curriculum appropriate for computer applications.
03	Define criteria for developing of a computer application in an instructional subject area.
04	Write a segment of the computer-use instructional unit.
06	Analyze writing against criteria for computer applications of an instructional subject area.
04	Write training unit introducting teachers to the computer.
05	Tryout introductory teacher training unit with available teachers in the school district.
06	Revise teacher training materials on the basis of tryout results.
24	Establish procedure for final revisions of training instructional units.
22	Monitor feedback on utilization of teacher training instructional units.

ENABLERS:

S	UV	
1	04	Knowledge of computer limitations and costs.
1	06	Knowledge of classroom computer applications in existence and their functionality.
1	05	Knowledge of the recognized experts in computer application.
1	06	Exposure to teacher use of computers.
1	01	Know the instructional objectives teachers seek.
1	06	Knowledge of current thinking in curriculum methodologies.
1	06	Knowledge of good and bad uses of computer.
1	04	Knowledge of how to use the computer in extending instruction.
2	01	Must be able to teach or have taught.
2	06	Computer programming skill.
2	18	Ability to use State recommended documents on curriculum for developmental purposes.
2	06	Writing materials for computer-aided instruction.
2	14	Writing at target level.
2	29	Sense of timeliness in directing closure on a writing task (skill).
2	37	Ability to select writing staff which can interact and work within context of critical interaction.
2	17	Ability to translate and define computer related jargon.
2	23	Skill in developing sensitivity and acceptance in others, re. limitations of computers.

S	UV	
2	32	Skill in identifying indicators of teacher training program weaknesses as shown by criteria tests.
2	18	Skill in determining the relevance of test items to objectives.
3	09	Awareness of various alternatives in instructing.
3	23	Sense of cost-benefits in linking computers to objectives.
3	52	Sensitivity to impact of criticism on staff writers.
3	47	Have tact but be willing to confront people qualitatively.
3	08	Sensitivity to verifying behavioral objectives as an appropriate activity.
3	03	Understanding the needs of the user as demonstrated by feedback on objectives, criteria tests, and critiques.

P-03: Computer-use Instructional Unit for Student

STANDARDS:

J	LM	
1	11	The computer is used in a way that does justice to its capability, allowing freedom to student.
1	11	The item is not something that could be equally well taught by teacher without use of computer.
1	09	Accuracy to subject.
1	04	Flow of writing enables easy understanding.
1	11	Material is appropriate for audience for whom written.
1	09	No omissions in coverage of item.
1	12	It develops conceptual understanding rather than mere computational ability.
1	11	The simulation is justified by doing something that cannot be carried out more effectively in real life.
1	12	Allows latitude for student's individual creation.
1	01	Agrees with preliminary format as to what each section of the unit should contain.
1	13	Other staff critiqued item as satisfactory.
1	07	Feel right about final written copy.
1	28	Successfully used by unfamiliar teacher in bench test.

TASKS:

NO	
04	Write student curriculum units in mathematics, which will integrate in the computer the kinds of things found in Algebra I, Geometry, Algebra II.

01	Examine existing materials for usability or adaptability.
02	Discriminate against computational skill development kind of unit (as being done already), and look for units to develop student concepts.
01	Look through material to avoid repeating what has already been done.
01	Examine new text books to determine what elements are suitable for use with computer.
04	Make outlines of topics contained in textbooks to generate composite subject outline.
03	Make list of ideas for suitable units for computer treatment.
04	Write unit according to previously written format.
04	Write introduction outlining purpose of unit.
04	Sketch basic concepts needed before going to computer.
04	Write explanation of concepts needed.
04	Explain concept of "linear."
04	Write next section which is warm-up exercise to check understanding of prerequisite concepts.
05	Go through lesson at teletype--guide through what to do.
05	Guide student to make "discoveries" intended for him (what to do at teletype and afterwards, with data).
04	Write section on application of this concept (discovery).
02	Face problem of coverage in one lesson relative to constraint imposed by previously written format.
06	Decide to break treatment down to separate lessons at the teletype, rather than trying to do it all at once.
06	Rewrite section, getting student working on line equation at teletype.
03	Consider format with other staff.
02	Discuss notion that hardware programming should be included.
33	Decide to supply programs in three or six different computer languages.
33	Decide to integrate study material with computer--use sessions in smaller segments.
22	Set own timelines for getting work done.
25	Decide to drive for lesser number of quality units, rather than greater number of inferior units.
04	Write format for "quickie" type unit to help students use computer as a "sophisticated adding machine."
05	Bench test units, to watch for weak spots in student handling.

ENABLERS:

S	UV	
1	01	Subject (mathematics).
2	01	Teaching of subject for 3 1/2 years.
2	22	In evaluating work without reference to whether it is way I would have done it.
3	23	To what computers can and ought to do in the learning process.
3	01	Sensitivity to own prejudices.
3	50	To ask self: "Is it appropriate?" "Have I made best use of computer?"
3	22	To feedback from pilot use of material.

3 03	To need for time to allow students to acquire concept or realization of principle to be conveyed.
3 27	To need for keeping to small pieces.

C-21: Capability in Staff

STANDARDS:

J	LM	
2	04	Timelines are met.
2	05	High quality work is produced.
2	26	Staff is conscientious.
2	31	Staff members willingly work overtime to achieve results.
2	26	Staff is loyal.
2	05	Staff is productive.

TASKS:

NO	
21	Determine capabilities required by job.
29	Maintain contacts with schools that are known to produce qualified people.
29	Frequently visit sites that do similar work.
01	Observe people working at their regular jobs.
21	Discuss project problems with people working in other organizations.
21	Consider the qualifications of outside people.
21	Mentally rank people in field as to their qualifications.
23	Hire selected people for occasional consulting jobs.
21	Consider how selected capable people in field (as personalities) would fit in project organization.
21	Contact potential candidates to make known vacancy.
21	Discuss requirements of position with potential candidate.
21	Describe working conditions (job security) with desired person.
21	Offer more money than expected to offset insecurity (set by project duration).
21	Hire staff member for project.
22	Assign responsibility to staff member.
22	Relinquish to staff member the authority to make possible the accomplishment of the responsibility.
26	Advise new employee administratively if required.
26	Advise new employee technically if required.
25	Concur with staff members' decisions.
25	Resolve differences of opinion between staff members.
25	Establish policies when required.
24	Monitor staff efforts.
31	Meet with staff frequently and informally.
25	Act as buffer between staff and agency.

ENABLERS:

S	UV	
1	12	Know schools which produce consistently good in areas of interest.
1	12	Know agencies employing people with expertise you need.
2	02	Skill in interacting with people.
2	26	Maintaining knowledge of field (expertise).
2	26	Maintaining knowledge of people (keeping track of it).
2	37	Judging capabilities of people.
2	48	Skill in getting people to like you.
3	02	Sensitive to sources of dissatisfaction of potential candidate in his present position.
3	03	Sensitive to potential candidate's need for supervision.
3	03	Sensitive to needs of potential candidate.
3	37	Be willing to relinquish authority.
3	38	Be sensitive to "tone" of project work (is more developing in system?).
3	58	Be willing to support staff's decisions.

C-22: Managed Money

STANDARDS:

J	LM	
2	13	Categories not overspent.
2	13	Adequate production accomplished without available money.
1	13	Budget approved by superior (agency).

TASKS:

NO	
22	Establish a spending plan.
22	Categorize planned spending in a budget.
31	Present budget for approval.
22	Justify spending plan as required.
22	Establish an accounting system for staff.
22	Apportion operating funds to staff.
22	Assume legality of expenditures.
22	Retain final approval authority as a monitoring function.
22	Advise staff on major expenditures.
22	Monitor adherence to accounting proceduring.

ENABLERS:

S	UV	
1	11	Know monetary requirements of project.
1	11	Know current status of spending (budget).

1	13	Know sources of funds.
2	22	Be able to project cost estimates over a year of operation.
2	38	Be able to get value for expenditure.
2	38	Be able to spend where it will do most good.
3	23	Be sensitive to monetary needs as new problems develop.
3	23	Sensitive to the value of what you get for your money.
3	37	Be willing to allow staff to spend.
3	40	Sensitive to the need to account for money.

P-01: Computer-use Instructional Unit for Administrators

STANDARDS:

J	LM	
1	07	Meets my own personal standards.
1	12	Field test results show materials to be satisfactory (achieve desired results).
1	06	Users buy (or accept) instructional unit.

TASKS:

NO	
01	Study literature to gain knowledge of status of computer use in school administration.
01	Collect detailed reports from other projects in field.
01	Study reports from other similar or relevant projects.
01	Select appropriate ideas from other similar projects.
02	Conceptualize unit of instruction in light of needs of public school administrators.
04	Outline manual for administrative unit.
02	Confer with school administrators concerning unit content.
04	Write draft of manual using outline as guide.
06	Study draft of manual to identify poorly presented areas.
06	Edit draft to improve format and presentation.
22	Direct secretary to type final copy.
06	Proof read final copy.
03	Plan details of field-test presentation of course (instructional unit).
31	Confer with consultant as to evaluation of instructional unit.
03	Prepare formal evaluation plan for agency records.
04	Construct measuring instrument (questionnaire).
23	Select field-test site for test of unit.
29	Confer with personnel at field-test site as to procedures to be followed.
29	Plan detailed arrangements for evaluation with site personnel.

03	Plan presentation of course (unit) at field-test site.
05	Teach administration unit for field-test.
05	Collect field-test data by questionnaire.
05	Interpret field-test data to determine effectiveness of course.
06	Revise administrative unit (if necessary) in light of evaluation results.
06	Rewrite unit if necessary.
04	Print final version of unit.

ENABLERS:

S	UV	
1	04	Have basic knowledge of computer technology.
1	04	Have basic knowledge of public school administration.
2	14	Able to write clearly and concisely.
2	15	Able to speak to groups (oral presentation).
2	35	Expressing your thoughts in terms meaningful to school administrators.
2	37	Able to judge the writing of others.
2	49	Able to interact productively with individuals.
2	49	Able to interact productively with groups.
3	02	Sensitive to administrators' problems and needs.
3	03	Sensitive to other people's motivation.
3	16	Sensitive to agency's policies.
3	20	Sensitive to agency's image.

P-05: Computer Simulation of School Administration (MIDAS)

STANDARDS:

J	LM	
1	12	Product illustrates standard (common) needs of administrators.
1	12	Target (administrators) obviously understands the illustrated applications.
2	34	Target (administrators) visualize application to their own situations.

TASKS:

NO	
01	Review relevant literature.
02	Conceptualize system in relation to needs of school administrators.
02	Confer with school administrators to confirm their basic needs.
03	List items to be included in data files.
03	Conceptualize interrelationships of data files; conceptualize computer retrieval system.
03	Write data (hypothetical) for inclusion in data files.

31	Confer (direct) with programmer in reference to programming required.
24	Confer with programmer to maintain awareness of status of work (monitoring).
32	Confer with consultant concerning promotion for MIDAS system.
07	Prepare (write) promotional materials for diffusion of MIDAS system.
31	Present demonstration of MIDAS at agency's Board of Directors meeting.
31	Discuss potential applications of MIDAS at agency's Board of Directors meeting.

ENABLERS:

S	UV	
1	05	Know information needs of school administrators.
1	06	Know similar type computer systems in actual use.
2	11	Be able to accept responsibility of being approval authority for own work.
2	20	Be able to be realistic in building content of data files.
3	02	Sensitive to school administrators' limitations of function.
3	09	Sensitive to using an approach that will appeal to public school administrators.
3	16	Sensitive to desired agency policies.
3	20	Sensitive to desired agency image.
3	33	Sensitive to the need for quality work.
3	53	Be able to be creative in conceptualizing system.

P-10: Administrative and Teacher Training Unit (Application Package)

STANDARDS:

J	LM	
1	07	Meets my own personal standards.
1	12	Field-test results show materials to achieve desired results.
1	06	Users purchase (or accept) materials.

TASKS:

NO	
01	Study literature to gain knowledge of current status of computer use by teachers and administrators.
02	Confer with colleague to determine elements that are common (or basic) to computer use by both teachers and (scope of manual) administration.
04	Outline manual of instruction for areas of computer use common to teachers and administrators.

02	Consider objectives that outline suggests.
02	Involve potential users (teachers and administrators) in planning by conferring on outline of unit.
02	State objectives in terms meaningful to users.
04	Draft manual using outline and objectives as guides.
06	Study draft to identify areas needing improvement.
29	Interact with colleague to insure compatibility with teacher unit.
06	Make corrections and adjustments as advisable.
22	Direct secretary to type final revision.
06	Proof read final copy.

ENABLERS:

S	UV	
1	04	Know basic computer technology.
1	06	Current status of use of computers in education.
2	14	Able to write clearly and concisely.
2	15	Able to make formal presentation.
2	35	Able to express your thoughts in terms meaningful or acceptable to both teachers and administrators.
2	49	Able to interact productively with colleagues.
3	02	Sensitive to problems and constraints of teachers and administrators.
3	03	Sensitive to needs of teachers and administrators.
3	03	Sensitive to other people's motivation.
3	16	Sensitive to agency's policies.
3	20	Sensitive to agency's image.

P-20: Plan for Future of Project

STANDARDS:

J	LM	
1	14	Approval by funding agency.
2	21	Receipt of funds.
1	13	Parent agency approval is gained.

TASKS:

NO	
24	Judge impact project is currently having by contacts with field.
32	Discuss current project with field contacts.
02	Discuss desired focus of future effort with review panel.
02	Discuss proposed plans with field contacts.
01	Visit potential field sites.
02	Discuss plans with potential field sites.
21	Identify field workers desired at potential field sites.

23	Discuss possible consortium effort with potential field sites.
23	Select field sites for inclusion in proposal.
04	Write description of effort to be made (component of project).
22	Project cost estimates for portions of proposal.
04	Prepare summary budget for proposal.
04	Write draft proposal for future effort.
22	Direct that draft of proposal be typed.
06	Proofread draft of proposal.
22	Direct that final typing be done.
04	Duplicate proposal as required by potential funding agency.

ENABLERS:

S	UV	
1	06	Know current status of field (computers in education) in general.
1	12	Have personal knowledge of who is expert in field.
1	12	Have personal knowledge of people's capability in field.
1	27	Have direct personal knowledge of potential field sites.
2	37	Able to judge capabilities of people.
3	16	Senstivity to political attitude in potential field sites.
3	16	Sensitive to reputation of potential field sites.
3	16	Sensitive to frame of reference of potential funding agencies.
3	57	Sensitive to imminence of deadlines.

E-24: Modification of Computer Program

STANDARDS:

J	LM	
1	22	The modified program successfully performed in the computer.
2	42	The modified program was shorter and more efficient than the original, in that file manipulation, chaining, and inaction with other computer programs was reduced.

TASKS:

NO	
01	Review original program to determine where modification can be made and still provide the desired output.
06	Rewrite program to remove long literal strings from the continuous operation of the program but that could be called upon when they were needed.
06	Convert modified program to paper tape using teletype console.
05	Feed modified program into computer from the paper tape using the teletype console.

ENABLERS:

S	UV	
1	04	Know BASIC language (computer).
1	22	Have to know, of the two computer systems available, which one is most efficient time-wise and which one is most efficient cost-wise.
1	22	Have to know the monitor commands to the computer to delete portions of the program being modified for the conversion from one computer to another.
1	22	Know the differences in BASIC languages (computer) between the two computers working with.
2	27	Able to operate teletype to prepare paper tape for input to computer.

P-23: Clearinghouse for Educational Application of Computer Technology

STANDARDS:

J	LM	
1	11	Materials relevant to level (e.g., school, rather than college).
1	11	Materials relevant to type of computer use specified for this project.

TASKS:

NO	
01	Gather all materials in computer-aided instruction relevant to the function seen for computers in this project.
01	Evaluate available materials relative to computer-use functions.
04	Write a report (suggested quarterly) giving availability, evaluation of material, how to acquire, kinds of course appropriate for the background necessary to use it, time taken in use, by subject area (English, math, science, etc.).
23	Draw up a letter and send to 75 or 80 projects to obtain participation.
24	Receive and examine responses to letters requesting participation.
03	Design regular format for project descriptions.

24 Examine project responses to determine context before filing away for future referencing.

ENABLERS:

No information collected under this heading.

CASE PROFILE NO. 12

Written by
R.E. Myers

PROJECT TITLE: The Integrated Career Development Curriculum

(ICDC Project)

AN EDUCATIONAL DEVELOPMENT PROJECT CONCEREND WITH: Developing and evaluating an integrated career development curriculum appropriate for use in isolated small high schools located in sparsely settled areas.

A PROJECT OF:

Western States Small Schools Project
1400 University Club Building
136 East South Temple Street
Salt Lake City, Utah 84111

This profile has been prepared according to

PROFILE FORMAT No. 2

Three profile formats are represented in this volume.
The reader should refer to this number when making
use of the reader's GUIDE to the profiles.

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Chapter I: Overview

This chapter contains a narrative introduction to the Integrated Career Development Curriculum Project, including the objectives, rationale, and significance of the project and the context in which the project operates.

Synopsis of the Project

Title: The Integrated Career Development Curriculum.

Responsible Agency: Western States Small Schools Project.

Funding Source: U.S. Office of Education.

Funding Duration: July 27, 1968 to December 31, 1972. (4 years and 5 months)

Observation Dates: April, May 1971.

Present Stage of Development: Middle stage, which is the curriculum development phase or second phase of the project.

RDD&E Focus of Project: To date, primarily development (the next phase will be a testing effort).

Expected Outcome: Single Concept Learning Units Package (SCLU).

Level of Funding and Duration: Medium-High. (level 5 of 7 levels)

Agency Setting: Public education.

Setting of Primary Location of Work Efforts: Consortium of Utah, Nevada, New Mexico, Arizona, and Colorado School Districts.

Staff Summary (Current):	Professional	Support
Total Full Time Equivalence (in man years):	3.00	2.00
Number of Personnel Assigned:	7	2

Professional Specialities of Staff (interviewees only): educational administration, guidance/counseling, educational psychology.

Objectives, Rationale, and Significance of the Project

The Integrated Career Development Curriculum Project (ICDC) is an outgrowth of an extensive effort by the Western States Small Schools Project (WSSSP) to find ways in which rural youth can better prepare themselves for careers in both rural and urban settings. During the period 1965-1968, WSSSP created a Career Selection Education Program, the forerunner of the ICDC Project. It was recognized that a genuine curriculum which would serve the students in making decisions about career opportunities and communities in which to live was lacking in the original program. As a result of this finding, the ICDC Project was initially funded in the amount of $303,300 for the period July 27, 1968 to June 27, 1971.

The overall objective of the ICDC Project is to facilitate career preparation by young people attending isolated small schools but who ultimately may become employed in more complex urban communities. To provide the means whereby students are helped to understand their own capabilities and the career opportunities commensurate with those abilities and talents, a curriculum based upon the general capabilities necessary for most occupations is being created.

A panel of consultants, the Quality Assurance Panel, is assisting in the development of this curriculum. The Panel is made up of experts in the fields of rural sociology, vocational education, rural education, and educational psychology, and is asked to make recommendations and decisions about every important operation of the project, i.e., performance objectives, single concept learning unit prototypes, production procedures, curriculum strategies, and instructional strategies.

Supporting the major objective, which is to develop and evaluate an integrated career development curriculum appropriate for use in isolated small high schools located in sparsely settled areas, are the objectives of each of the project's three phases. These objectives are:

Phase I - (a) to define the concepts, skills, and attitudes students should possess on completion of the curriculum, and
(b) to develop terminal behavioral objectives for each component of the integrated career development curriculum.

These Phase I objectives were carried out by a curriculum development task force of curriculum, guidance, and vocational education specialists. Along with the work of this task force, an outline for the Integrated Career Development Curriculum as a whole was developed through research conducted by a panel of consultants. This outline defines the gross educational objectives of a Career Development Education program for small schools and furnishes the principal components of the proposed curriculum being developed.

Phase II - (a) to develop the proposed curriculum and appropriate instructional materials including course outlines, instructor handbooks, student study materials, training aids, and evaluation instruments; and

(b) to conduct a preliminary try-out and evaluation of the developed curriculum and materials.

Phase II objectives are being carried out by the curriculum task force which, with the assistance of subject matter specialists, is selecting/developing instructional materials and devices.

Phase III - (a) to inform all staff members of the 14 pilot schools about the curriculum and their roles in the activity,

(b) to train a "career selection agent" to serve as a project coordinator and staff trainer for each of the 14 cooperating high schools,

(c) to try out and evaluate the developed curriculum and instructional materials in 14 cooperating pilot schools, and

(d) to prepare and disseminate the results of the study.

These Phase III objectives will be attained in part through a one-week workshop to familiarize all faculty members of the cooperating pilot schools with the curriculum and instructional materials, and a four-week institute to train a "career selection agent" to serve as a coordinator and teacher trainer for each of the 14 cooperating pilot schools.

During the period of 1963-1964, when WSSSP was working in the areas of enlarging the curriculum, individualizing instruction, adapting technology to the classroom, and experimenting with flexible scheduling, the project personnel became interested in getting students aware of a wider range of vocational opportunities . A pilot study which used the extended community as a laboratory was begun at Meeker High School in Colorado. This experiment was called the Vocational Exploration Program, involving business people, professional people, and the high school students of the community.

Other small rural high schools in the five states of Utah, Neva New Mexico, Colorado, and Arizona began similar programs during 1965-1968 with the backing of WSSSP. These developments led to the Career Selection Education Program which in turn led to the ICDC Project and the conception of an integrated career development curriculum. The term "integrated" was chosen to suggest a course of study representing a synthesis of the student and his present environment in which this synthesis extends into the student's future.

Part of the rationale for this approach to curriculum development is that it should facilitate and assist individuals in synthesizing and building concepts, rather than encouraging them only to learn job-specific skills. The several state directors and their associates were motivated to launch this project as a result of the belief that learning is a continuous process. Learning occurs in every kind of context, of course, and it was felt that high school students should look upon life as a series of learning experiences. Accordingly, a major goal of the project is helping the student to develop productive skills and concepts which are useful in many contexts.

The project will provide a model curriculum, course content, and training materials appropriate for use in isolated small high schools located in sparsely settled areas where low population density, transportation factors, lack of financial resources, and other factors do not facilitate the development of comprehensive high schools. The proposed curriculum is intended to provide a general education, systematic career selection, and occupational experience in an integrated relationship through individualization of instruction.

Context in Which the Project Operates

Relationships to parent agency. The ICDC Project is one of two projects sponsored by WSSSP, the other being Staffing Patterns for Upgrading Rural Schools (SPURS). At present, WSSSP is not undertaking any projects on its own, as it has in the past several years. It exists because of a commitment upon the part of educators in the states of Arizona, New Mexico, Colorado, Utah, and Nevada to upgrade rural education and because of governmental and past private support.

Physical/environmental setting. The ICDC Project Director's office is located in Salt Lake City with the Utah State Board of Education, while the Co-Director has his offices in Carson City with the Nevada State Department of Education. As represented by these two offices, the entire ICDC Project is widely spread throughout the states involved.

The Director's "office" is essentially a desk adjoining another in an open area of the sixteenth floor of the University Club Building in Salt Lake City. This open area is shared by the Utah State Board of Education with two or three other agencies. The Director's secretary shares the same situation as he does, being located around the corner within a row of other secretaries.

The Co-Director's office is more private, being an enclosed area in a small office building two blocks from the main street of Carson City. He has quicker access to secretarial assistance and the files, inasmuch as his secretary and their filing cabinets are outside his office in an open area accommodating two or three other secretaries.

The working conditions in both offices appear to be pleasant. The lack of privacy in the Salt Lake City office is offset by a panoramic view of the northern part of the city, including the capitol buildings. In contrast, the Carson City office is conveniently located near the town's business section, with parking space being available just outside the front door of the building. Carson City has the drawback of not easily being reached by air transportation.

Time lines. Figure 1 represents time lines for the principal products of the project. Taken from the ICDC PERT Chart, it extends from 18 months after the project came into being until four months after our visit to the project was completed.

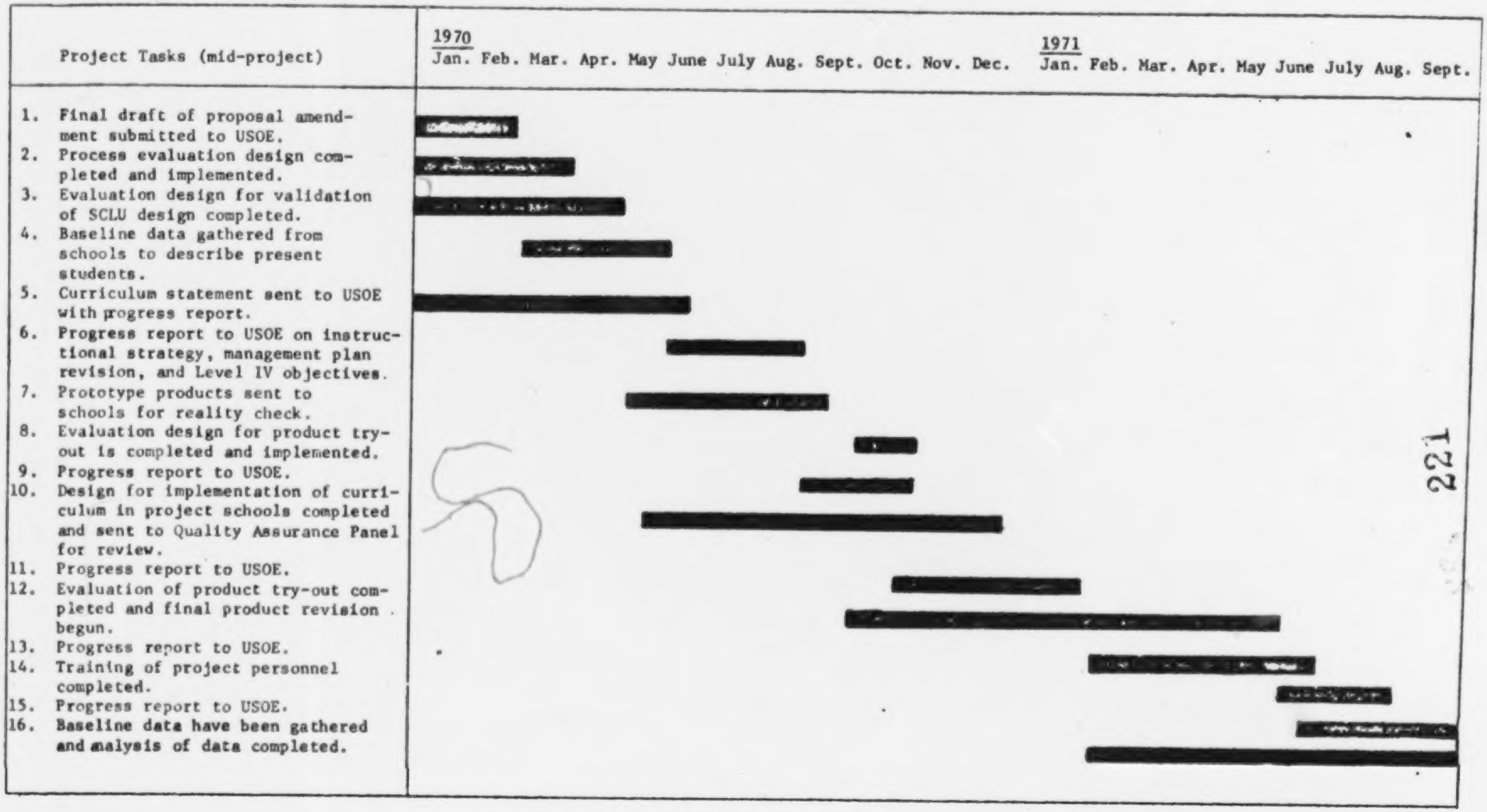

FIG. 1. Project time lines chart.

Chapter II: Parameters of the Project

This chapter dicusses the staffing patterns of the project; and contains a project organizational structure, a roster of staff, an index of outputs, and an output map.

Project Structure

Staff structure. Essentially a project within a project, ICDC has grown out of the activities of WSSSP and in many ways is indistinguishable from it. One of these ways is that its objectives are consonant with the broader ones of WSSSP, another is in its use of the relationships established by WSSSP among people in the five states involved,[1] but one of the most clear examples is in the organizational structure of ICDC as shown in Figure 2.

Launched in 1962, but not funded as a project since 1970, WSSSP acts essentially as an agency, supporting its personnel by SPURS and ICDC. These personnel share responsibilities for both projects and WSSSP. The Director of SPURS is the Coordinator of ICDC, and the Director of ICDC assists him with the SPURS Project, while both of these people operate WSSSP. One-half of the Director's time and one-fourth of the Co-Director's is devoted to ICDC. This means that no professional staff member is working full time on the ICDC Project, although one person did last year in developing part of the curriculum.

Project roster. After an initial interview with the Project Director, two trips were undertaken for the purpose of interviewing management personnel and high school coordinators in the field. A total of six persons who have responsibilities for various aspects of the ICDC Project were interviewed at sites in Utah, Arizona, Nevada, and Colorado. Those interviewed were the Project Director, Project Co-Director, Writer-Consultant, and three high school coordinators. A project roster of staff is presented in Table 1.

Outputs Generated

Before the formal interviews were begun, data concerning the project were gathered and the outputs being generated were identified. The ways in which those outputs are related to each other is shown in Figure 3. Those project personnel who were linked to significant outputs were interviewed about their roles in generating the outputs.

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[1] These involve people from the five states who are interested in developing and upgrading rural secondary education. However, as far as ICDC is concerned, the strength of this relationship has yet to be demonstrated in disseminating and implementing a curriculum.

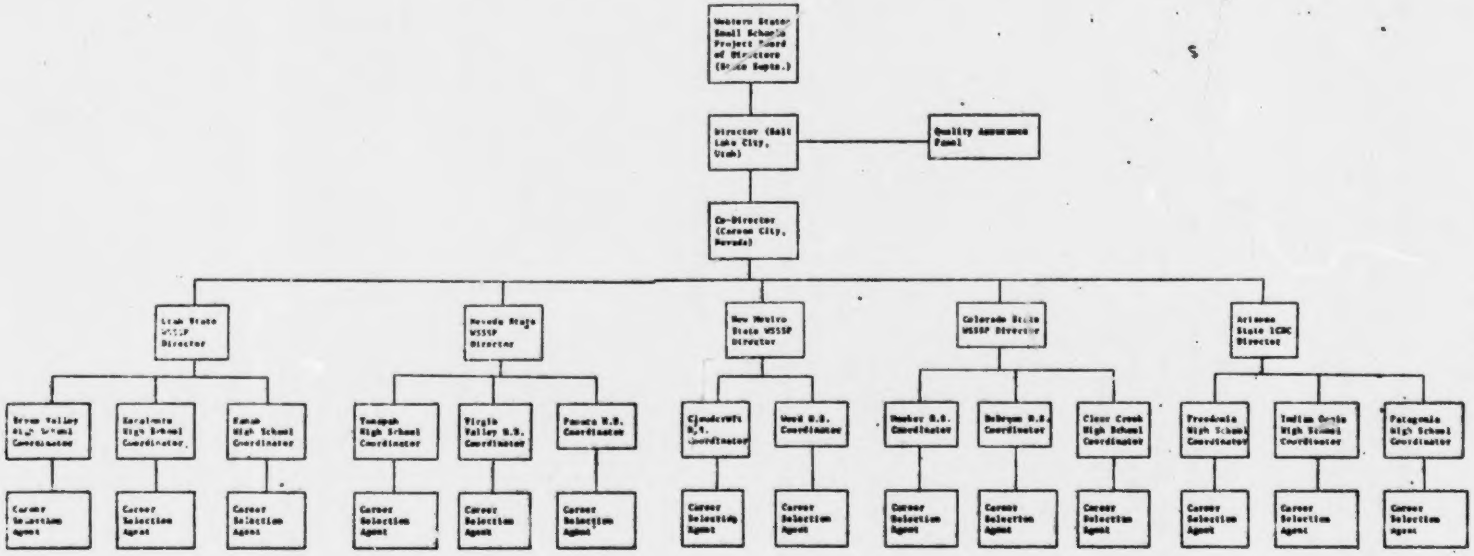
Western States Small Schools Project Board of Directors (State Supts.)
Director (Salt Lake City, Utah)
Quality Assurance Panel
Co-Director (Carson City, Nevada)
Utah State WSSSP Director
Nevada State WSSSP Director
New Mexico State WSSSP Director
Colorado State WSSSP Director
Arizona State ICBC Director
Bryce Valley High School Coordinator
Escalante High School Coordinator
Kanab High School Coordinator
Tonopah High School Coordinator
Virgin Valley H.S. Coordinator
Panaca H.S. Coordinator
Cloudcroft H.S. Coordinator
Wood H.S. Coordinator
Meeker H.S. Coordinator
DeBeque H.S. Coordinator
Clear Creek High School Coordinator
Fredonia High School Coordinator
Indian Oasis High School Coordinator
Patagonia High School Coordinator
Career Selection Agent

FIG. 1. Project organizational structure.

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TABLE 1

Project Roster of Staff by Job Titles

Administrative Personnel

*Project Director

*Project Co-Director

State WSSSP Director for Utah

State WSSSP Director of Nevada

State WSSSP Director for New Mexico

State WSSSP Director for Colorado

State ICDC Director for Arizona

Consultants

*Writer - Consultant

Evaluation - Consultant

Cooperating (Unpaid) Personnel

*Project Coordinator at Indian Oasis High School at Sells, Arizona

Project Coordinator at Fredonia High School at Fredonia, Arizona

Project Coordinator at Cloudcroft High School at Cloudcroft, New Mexico

Project Coordinator at Weed High School at Weed, New Mexico

Project Coordinator at Panaca High School at Panaca, Nevada

Project Coordinator at Virgin Valley High School at Mesquite, Nevada

Project Coordinator at Tonapah High School at Tonapah, Nevada

Project Coordinator at Bryce Valley High School at Tropic, Utah

Project Coordinator at Escalonte High School at Escalonte, Utah

Project Coordinator at Kanab High School at Kanab, Utah

*Project Coordinator at Meeker High School at Meeker, Colorado

Project Coordinator at DeBeque High School at DeBeque, Colorado

Project Coordinator at Clear Creek High School at Idaho Springs, Colorado

*Interviewed

Index of outputs. The following is an annotated list of the outputs constituting the principal outcomes of the project. This listing includes a classification of each output according to its primary focus as either a research, development, diffusion, or evaluation effort, as well as an arbitrary identification number cited for each output, which identifies it as a management outcome (e.g., M-01) or a production outcome (e.g., P-01).

M-01. Revised Project Management Plan. This is a management plan which is periodically reviewed by the Quality Assurance Panel. It makes explicit the tasks and time lines. Since the inception of the project, the project management plan has been modified several times. A major decision involved extending the timelines to include another year during the second phase (developing the curriculum and appropriate instructional materials). This decision was approved by the funding sponsor. (development)

M-02. Fiscal Work Program. A modified Program Planning and Budgeting System has been used to handle the budgetary/fiscal problems of the ICDC Project. Essentially, the fiscal work program is a set of accounting procedures for the project. (development)

M-03. Production Procedures. Another part of the project management plan is the set of procedures whereby the curricular materials, objectives, and evaluation instruments are developed. (development)

M-04. Evaluation Design. A design for evaluating the project's testing materials. The field test data is part of the management plan. There have been two consultants to the project for the evaluation component. (evaluation)

P-05. Curriculum Statement. The six months spent at the outset of the project's existence in formulating a statement of objectives (performance objectives stated in behavioral terms) was valuable largely for the experience gained in attempting the task. It was decided that the statement be repeated, and the directors, writers, and consultants began the task again at the beginning of 1969. A curriculum statement has not yet been approved by the Quality Assurance Panel and the funding sponsor. (development)

P-06. Quality Assurance Panel Recommendations for the Curriculum Statement. This is the evaluation--including recommendation and decisions--of the curriculum statement (P-05) and its operation within the project. (evaluation)

P-07. Review of Curriculum by Schools. The curriculum statement and strategies for implementing an integrated career development curriculum were reviewed by schools during the various stages of its development for "field reality checks." (evaluation)

P-08. *Instructional Statement*. The basis for the curriculum is Woodruff's Life Internship Model. A theory of instruction springing from this model has been developed during the life of the project. (development)

P-09. *Quality Assurance Panel Recommendations for the Instructional Statement*. This is the evaluation--including recommendations and decisions--of the instructual statement (P-08) and its operation within the project. (evaluation)

P-10. *Specifications for Single Concept Learning Unit Prototypes*. Prototypes of the single concept learning units were developed by a process whereby specifications for the units were drawn up, the specifications for the prototypes were reviewed by the Quality Assurance Panel and the evaluation consultant, the production of the single concept learning units was begun on a priority basis, revisions of the units were made and reviewed, the prototypes were tried out in schools, and subsequently revised. (development)

P-11. *Quality Assurance Panel Recommendations for SCLU Prototypes*. This is an evaluation--including recommendations and decisions--of the SCLU prototypes (P-10) and their operation within the project. (evaluation)

P-12. *Analysis of Baseline Data from Schools*. Information about the high schools' students was acquired prior to the completion of the SCLU prototypes. It was believed that data concerning the students' interests, backgrounds, and abilities were needed if the prototypes were to "fit" the students in the rural high schools. (evaluation)

P-13. *Single Concept Learning Units*. The initial thrust in producing SCLU prototypes was in the area of basic technology. The other two areas of society and work and career guidance have received more emphasis recently. The prototypes for all three areas are expected to be completed by the end of the summer of 1971. (development)

P-14. *Field Trials in Schools*. There actually will be two types of field testing of the prototypes. Currently, a selected group of SCLU prototypes are being tested in some of the high schools as part of the plan to see if they are appropriate and effective; these do not constitute the formal field trials. The formal testing will take place when all of the SCLU prototypes have been written. (evaluation)

P-15. *Analysis of Field Test Data*. When the field trials have been completed, the data will be analyzed by the evaluation consultant and the project directors. (evaluation)

P-16. *Specifications for Revised Single Concept Learning Unit Prototypes*. In the development of the SCLU prototypes, a critical stage occurs after the field trials have been finished and the results of this testing are reviewed by the evaluation consultant, the directors, and the Quality Assurance Panel. Revisions of the units will be made in accordance with the critiques and recommendations of these persons in order that the prototypes be as useful and effective as possible for rural high school students. (development)

P-17. Quality Assurance Panel Recommendations for Revised SCLU Prototypes. This is an evaluation--including recommendations and decisions--of the revised SCLU prototypes (P-16) and their operation within the project. (evaluation)

P-18. Curriculum: Single Concept Learning Units Package. The principal focal output of the project is the package of single concept learning units which will be the result of the writing, testing, rewriting, retesting, and rewriting which takes place during the life of the project. (development)

Table 2 is an indexing of all the identified outputs of the ICDC Project by level, i.e., whether the output is focal, component, or facilitating in its nature. A focal output is an outcome of work expected, by contractual obligation, to emerge from a project. A component level output is an outcome of work effort that constitutes an element of or one step in the approximation to a focal output, and a facilitating output is an outcome of work effort that is supportive to the development of any of the outputs listed above, but is not in itself an instance of such outputs.

Output map. Figure 3 is an output map showing the dependent relationships between the outputs of the project. The relationships identified are not necessarily sequenced over time.

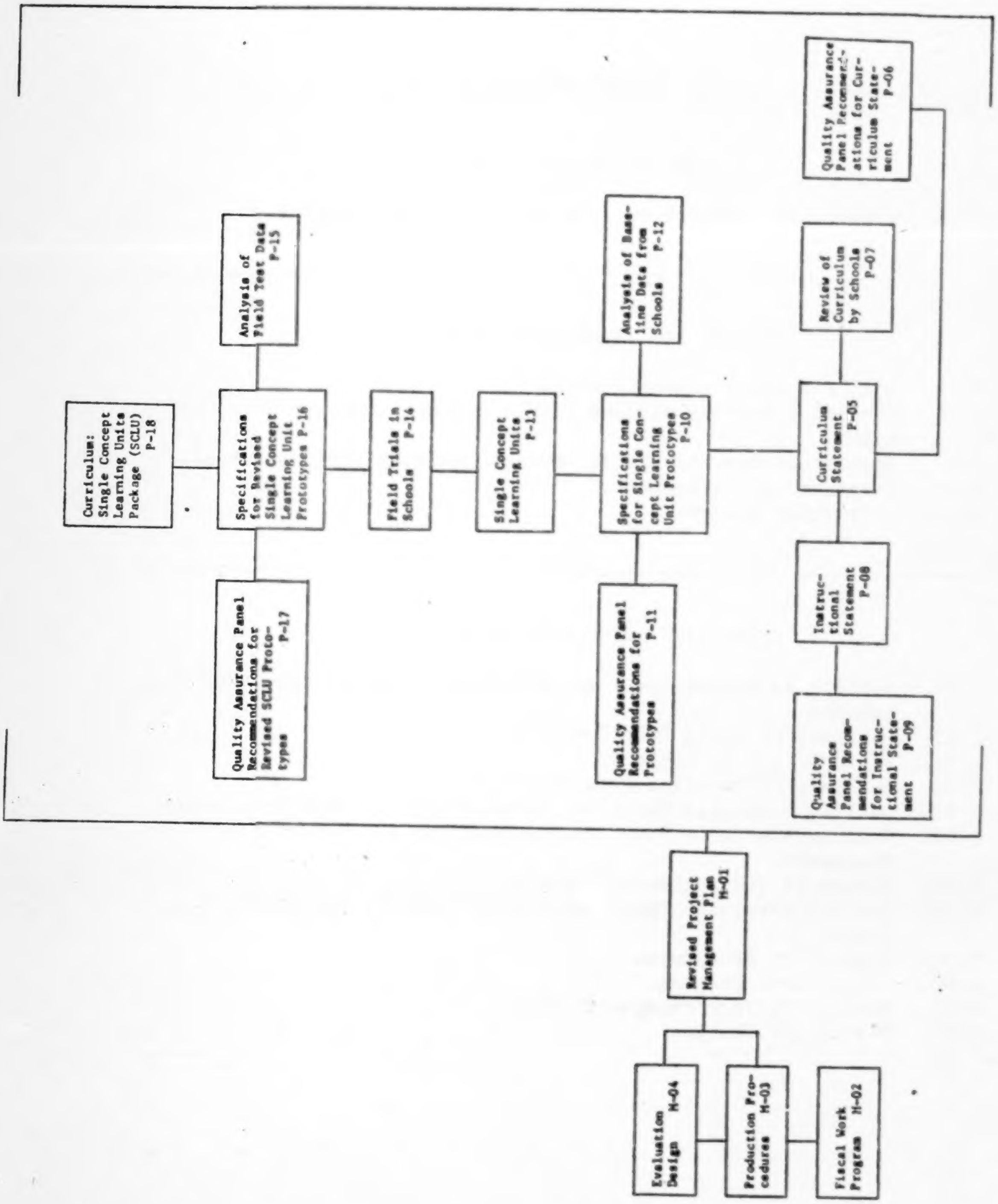
Curriculum: Single Concept Learning Units Package (SCLU) P-18
Specifications for Revised Single Concept Learning Unit Prototypes P-16
Analysis of Field Test Data P-15
Quality Assurance Panel Recommendations for Revised SCLU Prototypes P-17
Field Trials in Schools P-14
Single Concept Learning Units P-13
Specifications for Single Concept Learning Unit Prototypes P-10
Analysis of Baseline Data from Schools P-12
Quality Assurance Panel Recommendations for Prototypes P-11
Curriculum Statement P-05
Review of Curriculum by Schools P-07
Quality Assurance Panel Recommendations for Curriculum Statement P-06
Instructional Statement P-08
Quality Assurance Panel Recommendations for Instructional Statement P-09
Revised Project Management Plan M-01
Evaluation Design M-04
Production Procedures M-03
Fiscal Work Program M-02

FIG. 3. Output map.

TABLE 2

Output Index

LEVEL I: FOCAL OUTPUTS

P-18. Curriculum: Single Concept Learning Units Package.

LEVEL II: COMPONENT OUTPUTS

P-13. Single Concept Learning Units
P-16. Specification for Revised Single Concept Learning Unit Prototypes.
P-10. Specifications for Single Concept Learning Unit Prototypes.
P-08. Instructional Statement.
P-05. Curriculum Statement.

LEVEL III: FACILITATING OUTPUTS

P-17. Quality Assurance Panel Recommendations for Revised SCLU Prototypes.
P-15. Analysis of Field Test Data.
P-14. Field Trials in Schools.
P-12. Analysis of Baseline Data from Schools.
P-11. Quality Assurance Panel Recommendations for SCLU Prototypes.
P-09. Quality Assurance Panel Recommendations for Instructional Statement.
P-07. Review of Curriculum by Schools.
P-06. Quality Assurance Panel Recommendations for Curriculum Statement.
M-03. Production Procedures.
M-02. Fiscal Work Program.
M-01. Revised Project Management Plan.
M-04. Evaluation Design.

Chapter III: Summary of Data

The tables included in this chapter each summarize the interview data by category and by output interviewed around during the site visit. The statements made during an interview around a particular project output are identified and then classified under the category headings of (a) the standards by which one judges the satisfactory completion of the output, (b) the tasks required to generate an output meeting those standards, or (c) the enablers (knowledges, skills, and sensitivities) which facilitiate the carrying out of those tasks.

Within each category are a series or set of descriptive labels which are representative of interviewee statements within a particular category. These descriptive labels are listed in the table under the category heading. In the process of reducing raw data, narrative interviewee statements about an output were linked to one of the three categories (i.e., standard, task, or enabler). Each narrative statement was then classified by means of a number code according to the most representative descriptive label within a given category or subcategory.[2]

The production standards cited by the interviewees are shown in Table 3. Interestingly enough, the same standard was not applied to more than one product.

Table 4 shows how often management standards were cited by the interviewees in discussing their tasks. The data reflect the importance of project-school relationships.

Table 5 implies that the knowledges required of the project staff came largely by education courses and situational contexts.

The skills necessary to accomplish the outputs of the project are dispersed rather widely throughout the series of descriptive labels within the skills category. This can be seen in Table 6.

Table 7 shows that only three sensitivities were cited by the interviewees. The number of tasks per output are shown in Table 8.

---

[2] If the reader is interested in the narrative statements of the interviewees (raw data), these can be found in the Appendix. To locate the narrative statement for any given category, first note the output and its identification number in the table. Second, note that each descriptive label within a given category has a distinct number or code. Turn to the Appendix and locate the output. Under the output locate the category label or heading (standard, task, or enabler) and pinpoint the number or numbers (depending on frequency cited) of the descriptive label which appeared in the table. The statement in the Appendix opposite this number is the original narrative statement from an interviewee and is only represented in the table by the descriptive label and its number coding.

TABLE 3

Output Standards Cited for Each Output Analyzed

Project Outputs		Primary Categories of Standards for Outputs (Category code no. and label for coding set J-1)								
No.	Label	09 Lack of errors/discrepancies	11 Appropriate design/content	12 Goal Attainment	13 Acceptance by others (in proj)	14 Acceptance by sponsor	22 Functions as planned	24 Terminology appropriate	28 Operable by others	Output Totals
M-01	Revised Project Management Plan				1					1
M-02	Fiscal Work Program	1				1				2
P-13	Single Concept Learning Units		1	1					1	3
P-14	Field Trials in Schools						2	1		3
Category Totals		1	1	1	1	1	2	1	1	9

TABLE 4

Process Standards Cited for Each Output Analyzed

Project Outputs No.	Label	Primary Categories of Standards for Processes (Category code no. and label for coding set J-2) 04 Deadlines are met	13 Work conducted w/in budget	16 External cooperation gained	17 External enthusiasm evident	Output Totals
M-01	Revised Project Management Plan	1				1
M-02	Fiscal Work Program		1			1
P-14	Field Trials in Schools			3	1	4
Category Totals		1	1	3	1	6

TABLE 5

Enabling Knowledges Cited for Each Output Analyzed

Project Outputs		Primary Categories of Enabling Knowledges (Category code no. and label for coding set S-1)						
No.	Label	01 Standard school subjects	02 Subjects learned in courses	03 Subjects related to RDD&E	04 Technical/professional topics	05 Project focus topics/external	06 Project variables, external	Output Totals
M-01	Revised Project Management Plan					1		1
M-02	Fiscal Work Program	1						1
P-13	Single Concept Learning Units		1	1		1		3
P-14	Field Trials in Schools		2		1		3	6
Category Totals		1	3	1	1	2	3	11

TABLE 6

Enabling Skills Cited for Each Output Analyzed

Project Outputs No.	 Label	Primary Categories of Enabling Skills (Category code no. and label for coding set S-2) 01 Teaching	 02 Facilitating people interaction	 03 Translating content to media	 05 Programming project events	 06 Programming subject matter	 18 Finding fits/integrating	 24 Explicating goals/procedures	 27 Using equipment/systems	 29 Getting others to perform	 30 Adapting to situation/demands	 34 Coordinating activities	 37 Assessing skills/potential	 39 Constructing measurement tools	Output Totals
M-01	Revised Project Management Plan		1	2	1		1	1		1		1	2		10
M-02	Fiscal Work Program								2						2
P-13	Single Concept Learning Units	2		1		1								2	6
P-14	Field Trials in Schools	1	1								1				3
Category Totals		3	2	3	1	1	1	1	2	1	1	1	2	2	21

TABLE 7

Enabling Sensitivities Cited for Each Output Analyzed

Project Output	Primary Categories of Enabling Sensitivities (Category code no. and label for coding set S-3)		
No. Label	02 Capabilities and limitations	16 Existing value systems	Output Totals
P-14 Field Trials in Schools	2	1	3
Category Totals	2	1	3

TABLE 8

Tasks Cited for Each Output Analyzed

Project Outputs		Clusters of Tasks (Category code no. and label for coding set NO)											
No.	Label	01 Clarifying problem addressed	02 Formulating objectives	03 Designing the output	05 Collecting/processing data	06 Assessing the output quality	21 Procuring professional staff	22 Effecting accountability	24 Effecting quality control	27 Enhancing physical environment	31 Diffusing info within project	33 Effecting decision mechanisms	Output Totals
M-01	Revised Project Management Plan		2				2	1	6			1	12
M-02	Fiscal Work Program							9					9
P-13	Single Concept Learning Units			1	3	3	3		1				11
P-14	Field Trials in Schools	1		1	5	1	3	2	1	3	1		18
Cluster Totals		1	2	2	8	4	8	12	8	3	1	1	50

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Chapter IV: Supplementary Data

Included in this chapter is information about the classifications of output characteristics, the backgrounds of project and agency personnel, the job requirements for the project, the support resources of the project, and its funding.

Classifications of Output Characteristics

As the Oregon Studies evolved it became evident that outputs could be categorized in terms of a number of variables. Among them are (a) Structure (product, event, or condition), (b) Function (policy setting, management, or production), (c) Level (focal, component, or facilitating), (d) Character (knowledge, technology, implementation, or information), and (e) Stage of completion. These five schema are represented in Table 9 for each project output identified, with frequencies summarized for each category. Table 9 has been added to this profile subsequent to the profile's original writing.

Summary of Staff Backgrounds

The principle staff members of the project are also its administrators. As is the case with a number of other similar projects, much of the production work is "hired out." Six persons were interviewed, however, and their various backgrounds provide an index regarding the kinds of individuals who carry forth projects such as ICDC.

The highest degree held by all but one of the interviewees was a master's degree. One person holds a doctorate, and he has been used as a curriculum-consultant coordinator. The others might be characterized as professional administrators. Because of the structure of the staff, it is not really worthwhile to compare salaries with academic degrees. The Director and Co-Director receive the same salary rate, and all other interviewees are presently employed by other agencies.

By far the most common work experience of the six interviewees was teaching and/or administering in the public schools (see Table 10). Five of those interviewed have had five or more years in the public schools, and three of these individually have had from 18 to 21 years experience. It would seem that none of the interviewees has received specific formal training for work in an educational development or diffusion project.

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TABLE 9

Classifications of Output Characteristics

Project Outputs		Output Characteristic[a]																	
		Structure			Function			Level			Character (Products only)				Completion Stage					
No.	Label	p	e	c	ps	m	p	f_1	c	f_2	k	t	i_1	i_2	1	2	3	4	5	6
M-01	Revised Project Management Structure			X		X				X						X				
M-02	Fiscal Work Program	X				X				X		X			X					
M-03	Production Procedures	X				X				X		X				X				
M-04	Evaluation Design	X				X				X		X				X				
P-05	Curriculum Statement	X					X		X			X				X				
P-06	Quality Assurance Panel Recommendations for Curriculum Statement	X				X				X				X		X				
P-07	Review of Curriculum by Schools		X			X				X						X				
P-08	Instructional Statement	X					X		X			X				X				
P-09	Quality Assurance Panel Recommenda- for Instructional Statement	X				X				X				X		X				
P-10	Specifications for Single Concept Learning Unit Prototypes	X					X			X		X				X				
P-11	Quality Assurance Panel Recommendations for Single Concept Learning Unit Prototypes	X				X				X				X		X				
P-12	Analysis of Baseline Data from Schools	X				X				X				X			X			
P-13	Single Concept Learning Units	X					X		X			X						X		
P-14	Field Trials in Schools		X			X				X								X		
P-15	Analysis of Field Test Data	X					X			X				X					X	
P-16	Specifications for Revised Single Concept Learning Unit Prototypes	X					X			X		X							X	
P-17	Quality Assurance Panel Recommendations for Revised S.C.L.U. Prototypes	X				X				X				X					X	
P-18	Curriculum Single Concept Learning Units Package	X					X	X				X							X	
Classification Frequencies[b]		15	2	1	0	11	7	1	3	14	0	9	0	6	1	10	1	2	4	0

---

[a] The specific output characteristics are identified as follows:

Structure

p - product
e - event
c - condition

Function

ps - policy setting
m - management
p - production

Level

f_1 - focal
c - component
f_2 - facilitating

Character

k - knowledge
t - technology
i_1 - implementation
i_2 - information

Completion Stage

1 - completed over one year ago
2 - completed 3 to 12 months ago
3 - completed within last 3 mos.
4 - currently in progress
5 - not yet underway
6 - on going (continuous)

[b] Data totals in this table may vary slightly from data in tables reported elsewhere. This is a function of decision rules governing classification of outputs having been revised and applied to these data subsequent to the preparation of the profile.

TABLE 10

Selected Summary of Interviewee Backgrounds

Years of Prior Experience	Number of Interviewees in Each Year Category			
	None	Less than 1	1-4 Years	5 or More Years
In College or University Teaching	4	0	2	0
In College or University Research	6	0	0	0
In Public Schools	0	0	1	5
In State or National Education Agencies	3	0	0	3
In R & D Centers	6	0	0	0
In Present Organization (may be concurrent with other areas above)	2[a]	0	3	1

[a] Indicates that two people did not respond to this category.

In general, the interviewees reported that their professional training had been of value to them in carrying out their responsibilities in the project and that their professional work experiences were important in preparing them for their project jobs. Academic courses such as psychology, curriculum development, learning theory, testing, and research methods were mentioned as being helpful. It is interesting to note that many of these same courses are considered by the interviewees to be requirements for their positions on the project. Thus, it would appear that (a) they feel adequately qualified for their jobs, and (b) academic courses do prepare individuals for engaging in sets of activities encountered on projects such as ICDC. Only the Project Director indicated that his position might require greater academic preparation than he had acquired. The others said that the academic degree necessary for their job was the one they held.

Chapter V: Project Dynamics

The two key administrators of the ICDC Project have been associated with the parent agency project, WSSSP, for several years, the Co-Director having been appointed Coordinator of WSSSP about two years ago. Their working relationship basically involves supporting each other in the two current projects which WSSSP sponsors, namely, ICDC and SPURS. Although one person is in Salt Lake City and the other is in Carson City, they seem to experience little difficulty in communicating with one another and in arranging meetings for purposes of decision making.

Interrelationships Among Project Personnel

Aside from the established relationships of the Director and Co-Director, there are three sets of relationships among ICDC personnel. At a political level, the Director deals with the five state superintendents and the 14 high schools. The second set of relationships involves the Director with those persons who are consultants to the project, that is, the members of the Quality Assurance Panel and certain other consultants such as evaluation consultants who give direction to the project goals and modus operandi.

The third set of relationships involves the Director with curriculum writers. Last year (1969-1970) a head writer coordinated the writing of the general technology units while he was on a leave of absence from his position as Specialist in Vocational Education and Special Education, but he has returned to his job and is now acting as an occasional writer for the project. The Director is coordinating the writing assignments at present, and he is especially overseeing the career guidance units.

Interrelationships with Sponsors

A significant factor in the birth and growth of the ICDC Project has been the continuous support which WSSSP, the parent agency project, has received from its sponsors over the years. WSSSP's principle sponsor was generous in its support over a relatively long period of time, enabling the network of state relationships upon which ICDC depends to become firmly established. The sponsor of ICDC is a different agency from the principal sponsor of WSSSP, but it would appear that there will be no loss of continuity as a result of the departure of the old sponsor from the WSSSP scene.

Interrelationships With Other Agencies

In as much as ICDC exists by virtue of its relationships with a number of differing agencies, it is necessary to indicate what the structure of those relationships is like in order to understand the project. The Director and Co-Director are legal employees of the Utah State Board of Education and the Nevada State Department of Education respectively, being

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assigned to WSSSP and ICDC. Other basic relationships are those that exist between ICDC and the departments of education of the five states.

The Utah State Board of Education and the Nevada State Department of Education provide facilities for the Director, Co-Director, and supporting staff. Another set of relationships upon which the ICDC Project is built is with the 14 cooperating high schools in the five states. At this point in time, the persons who are coordinating the program are mainly the key administrators of the 14 school districts. A Career Selection Agent will be appointed by the administrator of each high school to actually implement the program. The State Project Directors receive one-fifth of their salaries from the ICDC Project; and, aside from the Director and Co-Director, they are the only other professionals on the payroll.

Staff Background

ICDC's Director and Co-Director have had public school careers prior to becoming involved in WSSSP. One had been a public school teacher and administrator for 18 years and the other had been a mathematics teacher for five years before becoming a mathematics consultant for his state department of education. Their skills appear to be complementary, and both have experience in project management.

Management Structure

The lines of authority and responsibility are fairly well defined for the ICDC Project. The Director has responsibility for developing the curriculum and coordinating the time lines of the project. The Co-Director is the person who attends to the fiscal matters of the project and who helps formulate policy. In as much as the two professionals get along well together and are able to communicate adequately at long range (that is, from Salt Lake City to Carson City), the structure is simple and effective. The morale of the staff is high partly because of the congeniality of the individuals and partly because they believe in what they are doing, namely, attempting to improve rural education in the five states.

Chapter VI: Implications for Training

Most of the suggestions for training offered by the interviewees were general in nature. Since most of the interviewees held administrative positions, the experiences they felt would be valuable for persons intending to work on projects similar to ICDC are largely those needed in administrative or managerial work. Here are their summarized suggestions for training individuals to assume their kinds of responsibilities:

1. Training in evaluation techniques.
2. Training in curriculum development.
3. Experiences in both elementary and secondary schools.
4. Experiences in counseling.

These were the major knowledges the interviewees felt would be important for persons engaged in projects such as ICDC:

1. An understanding of educational objectives.
2. A familiarity with management techniques such as PERT (Program Evaluation and Review Technique) and PPBS (Program Planning and Budgeting System).
3. An understanding of children.

The interviewees mentioned these specified skills as being valuable for someone assuming their jobs:

1. Political skills.
2. The ability to get along with people.
3. Communications skills, including writing skills.
4. An ability to work with tests and student records.

The interviewees also recognized certain sensitivities or personality traits as being important to individuals engaged in educational development. These included:

1. Being creative and innovative.
2. Being forward looking.
3. Being able to tolerate differences of opinion.
4. Having a conviction that education can be improved.
5. Being dedicated to helping people.
6. Having a "large" view of the world.

Experience on the job itself, or experience performing tasks which are similar or identical to those of the project, was felt to be the most valuable kind of training an individual could receive.

Appendix

Appendix: Listing of Output Standards, Tasks, and Enablers

The following is a list of standards, tasks, and enablers for outputs around which interviews were conducted. These statements were extracted from discussions with interviewees and were coded into their respective category sets. The selected code precedes the statement and indicates the following for:

STANDARDS

Code J:	Structure of Standards.
J-1	Standards against which outputs are judged. (output oriented)
J-2	Standards against which processes and/or operations are judged. (process oriented)
Code LM:	Primary Categories of Standards.

TASKS

Code NO:	Clusters of Tasks.

ENABLERS

Code S:	Structure of Enablers.
S-1	Knowledge.
S-2	Skill or ability to perform.
S-3	Sensitivity or awareness.
Code UV:	Primary Categories of Enablers (knowledges, skills, or sensitivities).

The codes associated with these three categories (standards, tasks, enablers) are the same both here in the listing and as previously cited in Chapter III tables.

The interviews of six persons involved in the ICDC Project were conducted over a period of two months at five different sites. With some notable exceptions, the interviewees were concerned with three different kinds of responsibilities: management, curriculum development, and coordination of the project's activities in the schools.

The following is the cataloguing of the standards, tasks, and enablers associated with the outputs which served as foci for the several inter-

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views. Each output is identified by its arbitrary identification number, title, level, and status. By level is meant whether it is a focal component, or facilitating output, and by status whether it was not yet initiated, in process, or completed at the time of interview.

M-01: Revised Project Management Plan
Level: Facilitating
Status: In process

One of the major responsibilities--perhaps the major responsibility--of the project management has been to find people who can actually write the Single Concept Learning Units. Coordinating the conceptualization, writing, and testing of the curriculum has proved to be tremendously difficult task, especially since the budget for the project is a fraction of the amount which would be spent by a commercial publisher.

In this project, the Co-Director's role is a supportive one. He reviews the conceptual papers written by the Director and the project consultants. There is a further review by the Quality Assurance Panel. Apparently there is an excellent network of communications among these persons, in spite of the fact that they live in states separated by hundreds of miles.

STANDARDS:

J	LM	
1	13	Approval by the Quality Assurance Panel for major statements, procedures, etc.
2	04	Schedule is met to match particular milestones of a product.

TASKS:

NO	
02	Confer with Director about plans for the project.
02	"Redesign the project" (with the Director).
33	Decide "who is going to get what job" and how he will be paid.
24	Critique papers written by the Director and members of the panel.
24	Review and evaluate work which is done by contract.
21	Identify people in the field who can write appropriate curriculum materials.
24	Direct (supervise) individuals who can write desired curriculum materials.
24	Set up a review procedure for units that writers produce.
24	Set up guidelines for writing curriculum unit.
21	Identify people who can tier objectives--taking overall objectives down through a series of tiers to instructional level objectives.

24 Direct people (supervise) who can tier objectives in preparing units of instruction (set up specifications for curriculum).

22 Coordinate activities of writers, consultants, and people in the high schools.

ENABLERS:

S	UV	
2	02	Be able to deal with people.
2	18	Relating all aspects of project to a basic philosophy of education.
2	24	Be able to interpret project's goals in terms of Woodruff's Life Internships Model at the instructional level.
2	03	Be able to write examples of curricular materials.
2	03	Be able to write curricular objectives.
2	37	Be able to identify people who can tier objectives--taking overall objectives down through a series of tiers to instructional level objectives.
2	29	Be able to direct people who can tier objectives.
2	37	Be able to identify people who can write units of instruction.
1	05	Understanding of the Woodruff Life Internship Model.
2	34	Skill in coordinating activities of writers and consultants.
2	05	Skill in using PERT technique.

M-02: Fiscal Work Program
Level: Facilitating
Status: In Process

One of the advantages of a project which is run by two persons is that a high degree of efficiency can be achieved when there are definite lines of authority and responsibility established. The fiscal matters of the project are entirely the responsibility of the Co-Director, and his fiscal work program apparently is operating without difficulty.

STANDARDS:

J	LM	
1	14	"If reports are accepted by sponsor," the fiscal job is done well.
1	09	If accounts are in order and balanced, the accounting is satisfactory.
2	13	Work program printout shows "we are staying within line categories."

TASKS:

NO	
22	Keep financial records for the project.
22	Have memo accounts posted (because federal categories and state accounting system don't match).
22	Keep up with sponsor's accounting procedures.
22	Report accounts of project to sponsor.
22	Confer with Director about what will be spent (in the individual categories).
22	Analyze what has been spent (and what is remaining) for the State.
22	Have secretary post expenses.
22	Have secretary send out checks after expenditures have been made.
22	Work with secretaries setting up ledger sheets and categories.

ENABLERS:

S	UV	
1	01	Knowledge in math and math instruction.
2	27	Ability to use a calculator.
2	27	Skill in using PPBS techniques.

P-13: Single Concept Learning Units
Level: Component
Status: In Process

The person who has been responsible for the production of the basic technology area of the curriculum has had tasks which are similar to the Director's. The latter has coordinated the other areas of the curriculum, in addition to his management duties.

STANDARDS:

J	LM	
1	12	Writer's unit follows format for basic technology units.
1	28	Students can follow the unit and perform satisfactorily.
1	11	Sequence of tasks for learner is appropriate.

TASKS:

NO	
21	Identify people with expertise in each of eight areas (general mechanical, spatial, electronics, etc.).
03	Set up a design for the single incremental learning units for each area of the capability.
21	Train the writers in the construction of the design.
06	Redesign (change) the units after writers submit them so that the units are workable for students.
05	Test certain units in the local schools to see how effective they are with students of low ability and/or motivation.
05	Test skills of high school students.
06	Determine if students were adequate to perform basic skills--if they were, units for their skills were not written (such as basic computation).
05	Field test units in three schools.
21	Identify people who can write curriculum materials and want to do so.
24	Send out units for review by experts in vocational areas.
06	Redesign units that proved unsatisfactory in initial field trials.

ENABLERS:

S	UV	
1	03	Knowledge of various types of curriculum development.
2	01	Skill in teaching at the high school and higher levels.
2	01	Skill in training people.
1	02	Understanding of how children learn.
2	06	Ability to organize sequential patterns in accordance with the way students naturally learn.
2	03	Ability to design behavioral objectives.
2	39	Ability to translate behavioral objectives into verbal test items.
2	39	Ability to pull elements out of curriculum and put them into a pretest and a posttest.
1	05	Knowledge from development of learning programs (courses) to solve problems in industry.

P-14: Field Trials In Schools
Level: Component
Status: In process

The Single Concept Learning Units which have been field tested are those, like the one dealing with drafting, that have been developed in the general technology area of the Integrated Career Development Curriculum. That part of the curriculum was the furthest toward completion at the time of interview. The task of field testing has proved to be more difficult for some school administrators than for others. As it happened, two of the three persons who were charged with the responsibility of seeing that the trials were conducted had trouble securing the cooperation of teachers who would devote the time and energy required to test the units adequately. It was reported that other administrators experienced little or no difficulty in getting the units tested.

STANDARDS:

J	LM	
1	12	Writer's unit follows format for basic technology units.
1	28	Students can follow the unit and perform satisfactorily.
1	11	Sequence of tasks for learner is appropriate.
1	22	The packages work well for the individual student.
1	24	The package is understandable to the student.
1	22	The package does what it is supposed to do--the student is able to perform in the ways prescribed.
2	16	Good communications between project personnel and high schools.
2	17	Enthusiasm on the part of students for the learning kit.
2	16	Approval by a student advisory committee.
2	16	Approval by a teacher advisory committee.

TASKS:

NO	
21	Identify people with expertise in each of eight areas (general mechanical, spatial, electronics, etc.)
03	Set up a design for the single incremental learning units for each area of capability.
21	Train the writers in the construction of the design.
06	Redesign (change) the units after writers submit them so that the units are workable for students.
05	Test certain units in the local schools to see how effective they are with students of low ability and/or motivation.
05	Test skills of high school students.
06	Determine if students were adequate to perform basic skills; if they were, units for these skills were not written (such as basic computation).
05	Field test units in three schools.
21	Identify people who can write curriculum materials and who want to do so.
24	Send out units for review by experts in vocational areas.
06	Redesign units that proved unsatisfactory in initial field trials.

21 Expose career selection agent, guidance person, and high school principal to ICDC package.
06 Convert individual units of package to semester-hour values.
05 Each school principal assigns individual units of packages to students as projects.
22 Each school principal has teachers check to see how students are doing with their packages.
01 Guidance person determines what students can do (e.g., the case of a brain-injured student).
05 Recommend to the teacher the units to use with her students.
05 Recommend the kinds of materials which will help students to supplement their on-the-job experiences.
05 Participating teachers insert packages in the curriculum to replace other units--for whole class or individuals.
21 Career Selection Agent, principal, and guidance person expose, through workshops or person-to-person contacts, the entire faculty to ideas and materials provided at workshop on implementation of packages.
05 Help each student to explore his vocational interests by administering appropriate tests.
29 Help each student to assess his abilities.
03 Select students to try out preliminary kit (drafting).
22 Assign teacher to assist students in working with kits.
31 Serve as a consultant to the persons directing the project.
29 Encourage principal and teacher of a high school to use the drafting kit.
29 See that the curriculum materials are available at the high school.
21 See that the teachers of the high school are able to avail themselves of the ICDC training program by making time and money available to them.
24 See to it that there is a follow-up to the training program and that there is feedback from the teachers.

ENABLERS:

S	UV	
1	02	"Understanding of educational objectives as propounded by Mager."
3	02	Appreciation for the problems of the small, isolated communities.
3	02	Realization that for the most part one is not able to give first-hand experiences to students in the many vocational fields.
1	02	Knowledge from education courses, especially counseling.
1	04	Experience as a counselor, getting to know child and his family.
1	06	Knowledge of students outside the classroom.
2	02	Ability to work with faculty.
1	06	Wide variety of experiences in all aspects of a small rural school.

2	01	Teaching experience--from fifth grade through graduate school.
1	06	Exposure to innovation and change as a result of involvement with WSSSP.
2	30	Being adaptable to change and experimentation.
3	16	Awareness that schools should be doing a better job ("are not doing the best job by any means").

CASE PROFILE NO. 13

Written by
R. E. Myers

PROJECT TITLE: The Development of Protocol Materials

(PROTOCOL Project)

AN EDUCATIONAL DEVELOPMENT PROJECT CONCERNED WITH: Developing visual, auditory, or printed reproductions of human behaviors that portray concepts found in the professional practice of teaching and learning.

A PROJECT OF: Teaching Research Division
Oregon State System of Higher Education
Monmouth, Oregon 97361

This profile has been prepared according to

PROFILE FORMAT No. 2

Three profile formats are represented in this volume. The reader should refer to this number when making use of the reader's GUIDE to the profiles.

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Chapter I: Overview

This chapter contains a synopsis of the protocol materials project; the rationale, objectives, and significance of the project; and a description of the context in which the project operates.

Synopsis of the Project

Title: The Development of Protocol Materials.

Responsible Institution: Teaching Research Division of the Oregon State System of Higher Education.

Funding Source: U.S. Office of Education, Bureau of Educational Personnel Development.

Funding Duration: July 1, 1970 to June 30, 1971. (12 months)

Observation Date: October 1970. (reobserved in June 1971)

Present Stage of Development: Initial phase.

RDD&E Focus of Project: Educational development.

Expected Outcomes:
1. Articles for Teaching Research Newsletter
2. Final Report
3. Progress Report
4. New Proposal
5. Prospectus for Refunding
6. Protocol Films
7. Field Test Evaluation Guide
8. User Materials

Level of Funding and Duration: Low-Medium. (level 2 of 7 levels)

Agency Setting: College/University.

Staff Summary (Current):

	Professional	Support
Total Full Time Equivalency (in man years):	3.25	1.25
Number of Personnel Assigned:		
Prime Contractor	7	3
Others (Film Production)	2	
Consultants	3	

Professional Specialties of Staff (interviewees only): educational psychology, instructional media, research design, anthropology, English education, communications, educational measurement, curriculum and instruction, sociology, social studies education, and electronics.

Significance, Rationale, and Objectives of the Project

The Development of Protocol Materials Project (Protocol) found significance in the idea for protocol materials advanced in Teachers for the Real World (Smith, B.O. et al., 1969). As defined in that book, protocol materials are visual, auditory, or printed reproductions of human behaviors that portray concepts found in the professional practice of teaching and learning. Therefore, virtually all types of professional situations in which a teacher is likely to be involved are considered appropriate for reproduction through protocol materials. As instructional materials they are intended to facilitate teachers in developing:

1. A functional knowledge of those key concepts generally identified in teacher education as relevant to the work of a teacher (e.g., commitment to learning, constructive sense of self, analysis, and evaluation);
2. The ability to discover, interpret, and describe these concepts as they are found in the behavioral situations arising within the teacher's world of work;
3. The ability to use such understanding in formulating plans that, as alternatives to current plans, are more effective in reaching desired ends in teaching; e.g., conferences with parents or other interactions between the teacher and students, teachers, parents, or administrators.

The rationale of the Protocol Project is to provide a means whereby a teacher can not only learn to clarify the desired ends toward which he is working within a specific situation, but can also learn to develop strategies for reaching those goals. Protocol materials should enable the teacher to focus on specific behaviors relevant to the concepts found in a situation, and from such a study acquire the cognitions and affects necessary for him to make the decisions appropriate to bridging the gap between the goals identified and the strategies needed to reach them within a particular situation. Although protocols can take various forms, they must be able to communicate among trainees in teacher education. Film, video tape, film strips, and audio tape are examples of media which may be used to represent or provide concrete referents for the concepts being studied.

Teaching Research (TR) is one of 12 institutions to receive a grant to develop protocol materials. The TR project has the following distinguishing characteristics:

1. It is designed to obtain information about the methodology of protocol materials development.
2. It is to produce an exemplary design for evaluating the effectiveness of the protocol materials developed in ongoing teacher education programs.
3. It is to produce an exemplary design for field testing the protocol materials for their utility in a wide range of institutions having teacher education programs.

4. It is to demonstrate a unique linkage between institutions and agencies within a state and across the nation for the development and testing of the materials to be produced.

The objectives of the project are to: (a) develop a functional and relatively exhaustive approximation to conceptual frameworks for classifying learner outcomes and to use the frameworks in forming a set of high priority educational outcomes; (b) develop protocol materials illustrative of the class of priority outcomes identified in [a]; (c) prepare user's guides for protocol materials developed in [b]; and (d) prepare a report summarizing the feasibility of developing and using protocol materials under widely varying conditions.

The conceptual frameworks, protocol materials, and guides are intended to undergo field trials in (a) the contexts for which they were specifically designed, and (b) contexts for which they were not specifically designed. The purpose of these trials will be to assure that the protocol materials and accompanying guides will be as representative and generalizable as possible. In an effort to achieve these qualities the frameworks, protocol materials, and user's guides will be developed in the contexts of two quite different kinds of institutions: a college of education and a clinical high school.

The project focuses primarily on the methodology of protocol development and the provision of validated exemplar protocol materials, rather than on the production of large amounts of material. Also, it focuses on protocol materials representing validated classes of pupil outcomes rather than on classes of teacher behaviors assumed to be related to pupil outcomes.

Context in Which the Project Operates

Relationships to parent agency. The Protocol Project is administered by the Learning Ecologies Program of Teaching Research. This program has been especially interested in the field of teacher education. Teaching Research, a division of the Oregon State System of Higher Education, renders a variety of services to the state and also to the nation in the fields of educational research, development, and evaluation.

Relationships to sponsor. The funding agency for the project is the U.S. Office of Education (USOE). The project has worked closely with USOE's Bureau of Educational Personnel Development (BEPD) and its agency, the Leadership Training Institute (LTI). In addition to regular LTI staff members at the University of South Florida in Tampa, the LTI is comprised of 14 individuals concerned with innovation in teacher education; these persons reside in all geographical areas of the country and operate individually and collectively to provide leadership for a variety of projects, such as Protocol, sponsored by BEPD.

Physical/environmental settings. The Protocol Project at Teaching Research is being administered through the cooperative efforts of three institutions: Teaching Research, Oregon College of Education (OCE), and John Adams High School. Both TR and OCE are located in Monmouth, Oregon. Adams High School is located in Portland, Oregon, some 65 miles north of

Monmouth. Adams is in a socio-economically mixed neighborhood in the northestern part of Portland, and is in its second year of operation as an avowedly experimental high school in an urban setting. Teaching Research has office space in the Education Building on the OCE campus, as well as in five other campus buildings nearby. It is within this physical setting that the project is housed.

Relationships to other efforts of a coordinated program. Teaching Research's Protocol Project is one of 13 such projects that have been funded by the BEPD. Meetings for the project directors and LTI staff have been scheduled for the fall of 1970 and for the spring of 1971. It is anticipated that communications among the various projects will be frequent and productive. Although the LTI staff is providing conceptual and technological assistance for these initial efforts to produce protocal materials, each project is essentially autonomous.

The contextual map (Figure 1) graphically represents the preceding relationships between the agencies involved in the Protocol Project.

4232

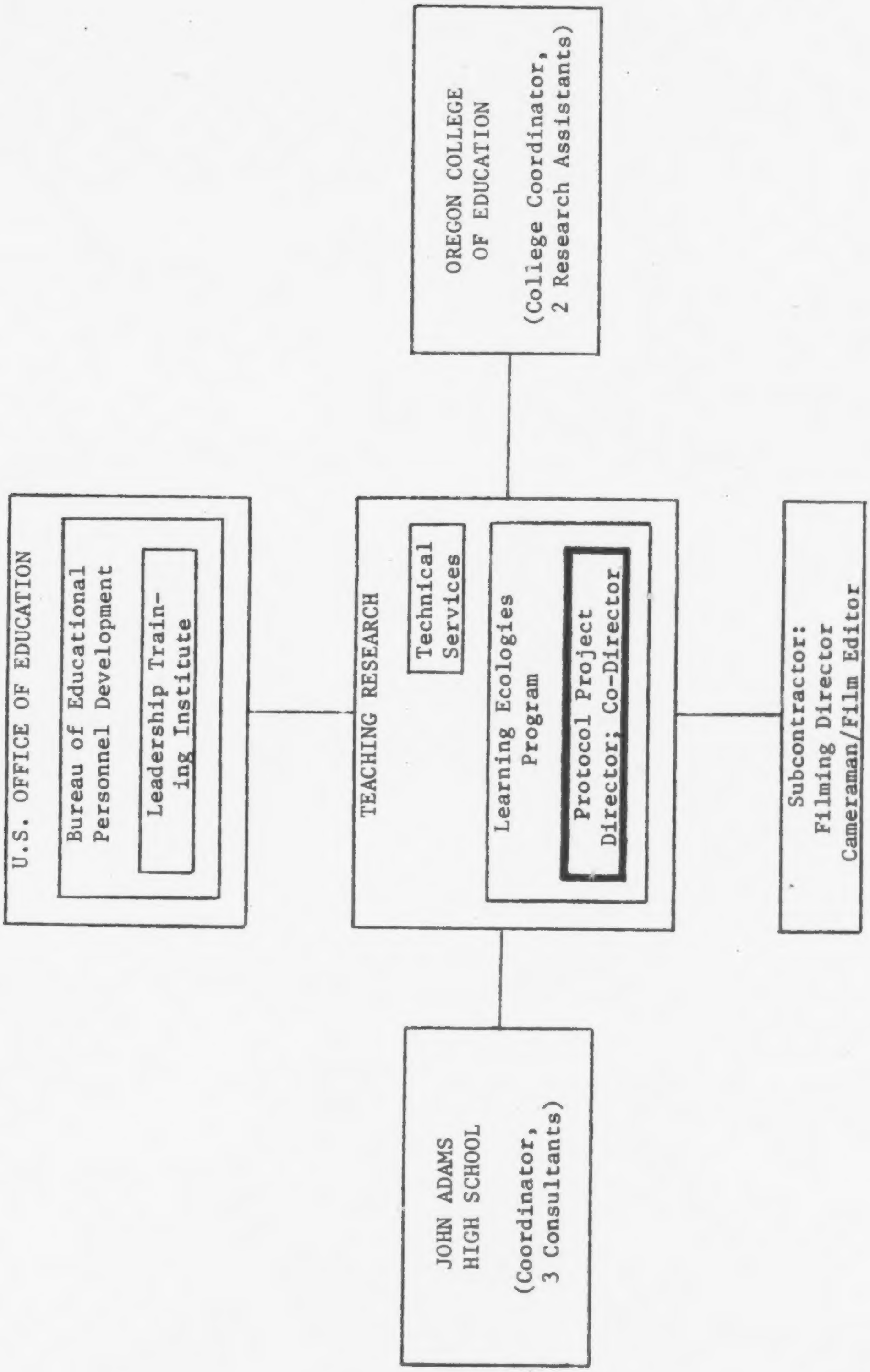

U.S. OFFICE OF EDUCATION
Bureau of Educational Personnel Development
Leadership Training Institute
TEACHING RESEARCH
Technical Services
Learning Ecologies Program
Protocol Project Director; Co-Director
OREGON COLLEGE OF EDUCATION
(College Coordinator, 2 Research Assistants)
JOHN ADAMS HIGH SCHOOL
(Coordinator, 3 Consultants)
Subcontractor: Filming Director Cameraman/Film Editor

FIG. 1. Contextual map.

Chapter II: Parameters of the Project

This chapter contains the staffing pattern of the Protocol Project, descriptions of the products being produced, and an index of management responsibilities.

Project Structure

Staff structure. The organizational map of the project (Figure 2) indicates the major relationships among the personnel of the institutions involved in conducting the project. The basic relationships which were established at the outset of the project have been maintained thus far.

Project roster. Five project members were extensively interviewed. These interviewees included the Project Director, the Co-Director, the OCE Coordinator, the Adams Coordinator, and one of the two research assistants (see Table 1).

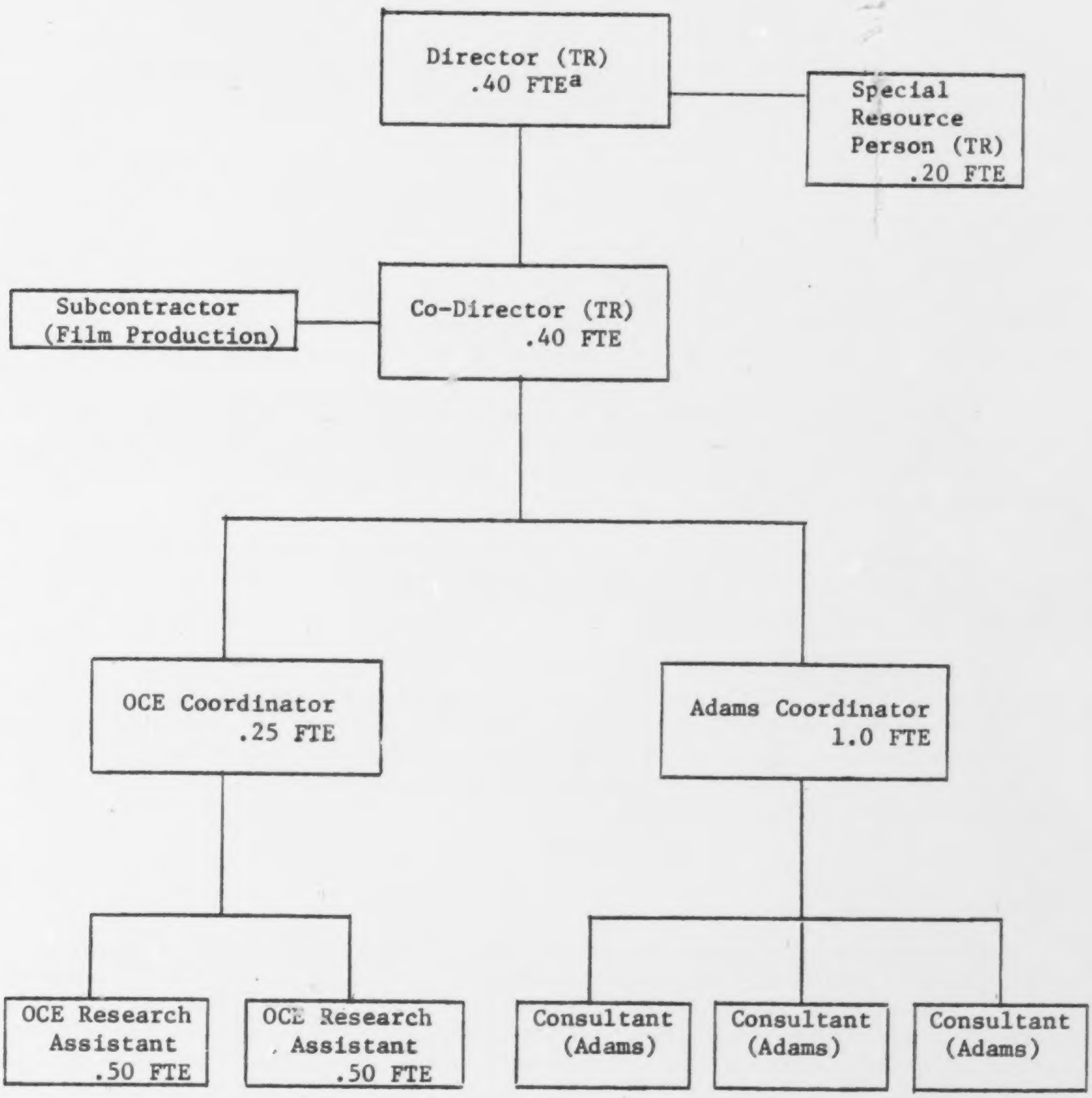
The support personnel for OCE and Teaching Research staff members consist of a secretary (half-time) at each institution and a media technician from Teaching Research.

Film making is largely the concern of the Co-Director, whereas the overall management of the project and design of the field testing procedures is being handled by the Project Director. The Director of the Learning Ecologies Program (Special Resource Person, Figure 2) is giving leadership to efforts to formulate a conceptual framework for the project, especially with regard to learner outcomes.

Outputs Generated

The outputs identified in this study are sorted into two categories: production oriented and management oriented. A production-oriented outcome is defined as a tangible or "hard" result of work efforts, surviving in the form of a transportable product. A management-oriented outcome is defined as an identifiable result of work effort, directly related to management operations.

Through contact with various project personnel, the tangible products and management outcomes being generated were first identified and then linked to an individual capable of describing them in detail. Interviews were conducted with these individuals using the outputs linked to them as controlling themes. In the two listings or indexes which follow Table 1, those outputs interviewed around are annotated and each output is identified as to its focus, i.e., research, development, diffusion, or evaluation. Also, each output has been arbitrarily assigned an identification number consisting of two parts: (a) a letter which permits easy identification of the output as a tangible product (P) or a management outcome (M), (b) a sequence number for all outputs irrespective of P or M. The numerical designation of the outputs appears in various tables and charts permitting one to examine a description and match the data from other tables to it.


Director (TR)
.40 FTE[a]
Special Resource Person (TR)
.20 FTE
Subcontractor (Film Production)
Co-Director (TR)
.40 FTE
OCE Coordinator
.25 FTE
Adams Coordinator
1.0 FTE
OCE Research Assistant
.50 FTE
OCE Research Assistant
.50 FTE
Consultant (Adams)
Consultant (Adams)
Consultant (Adams)

[a] Full Time Equivalency.

FIG. 2. Project organizational map.

TABLE 1

Project Roster of Staff by Job Titles

Administration

- *Project Director (TR)
- *Project Co-Director (TR)

Clerical

- Secretary (Adams)
- Secretary (OCE)
- Technician (TR)

Film Production (Subcontractor)

- Filming Director
- Cameraman and Film Editor

Research Staff

- *OCE Coordinator
- *OCE Research Assistant
- *OCE Research Assistant

- Special Resource Person (TR)
- *Adams Coordinator
- Consultant (Adams)
- Consultant (Adams)
- Consultant (Adams)

*Formally interviewed

Index of products. The following are the products identified from the Protocol Project.

No.	Product Label	Product Focus
P-01	Proposal	development
P-02	Project Objectives	development
P-03	PERT Chart for Project	development
P-04	Work Schedule for Project Management	development
P-05	Work Schedule for Conceptual Framework	development
P-06	Work Schedule for Protocol Materials	development
P-07	Work Schedule for User's Guide	development
P-08	Task Time Line	development
P-09	Articles for Teaching Research Newsletter	diffusion
P-10	Final Report	diffusion
P-11	Progress Report. The writing of a progress report by the staff. Provided the sponsor and other interested parties an opportunity to determine what the results of the staff's efforts to date had been. Summaries of work accomplished were submitted to the Project Director, and these were edited and added to by him.	evaluation
P-12	Cross-site Field Test Data	evaluation
P-13	National Field Test Data	evaluation
P-14	Budget	development
P-18	New Proposal	development
P-19	Prospectus for Refunding	development
P-20	Conceptual framework	development
P-21	List of Target Groups Identified	evaluation
P-22	List of Assessed Teacher Needs	evaluation
P-23	Taxonomy of Learner Outcomes. One of the major goals of this project is the construction of a system of classifying learner outcomes. As conceived by the Protocol staff, effective instructional management is a function of matching instructional acts to situation-specific interaction of setting, learner characteristics, instructional strategy, and instructional resources. Protocol materials are intended to produce specific learner outcomes. The theory for this model comes largely from the Special Resource Person.	development
P-24	List of Learner Outcomes for Objectives	development
P-25	Objectives for Target Population Students	development

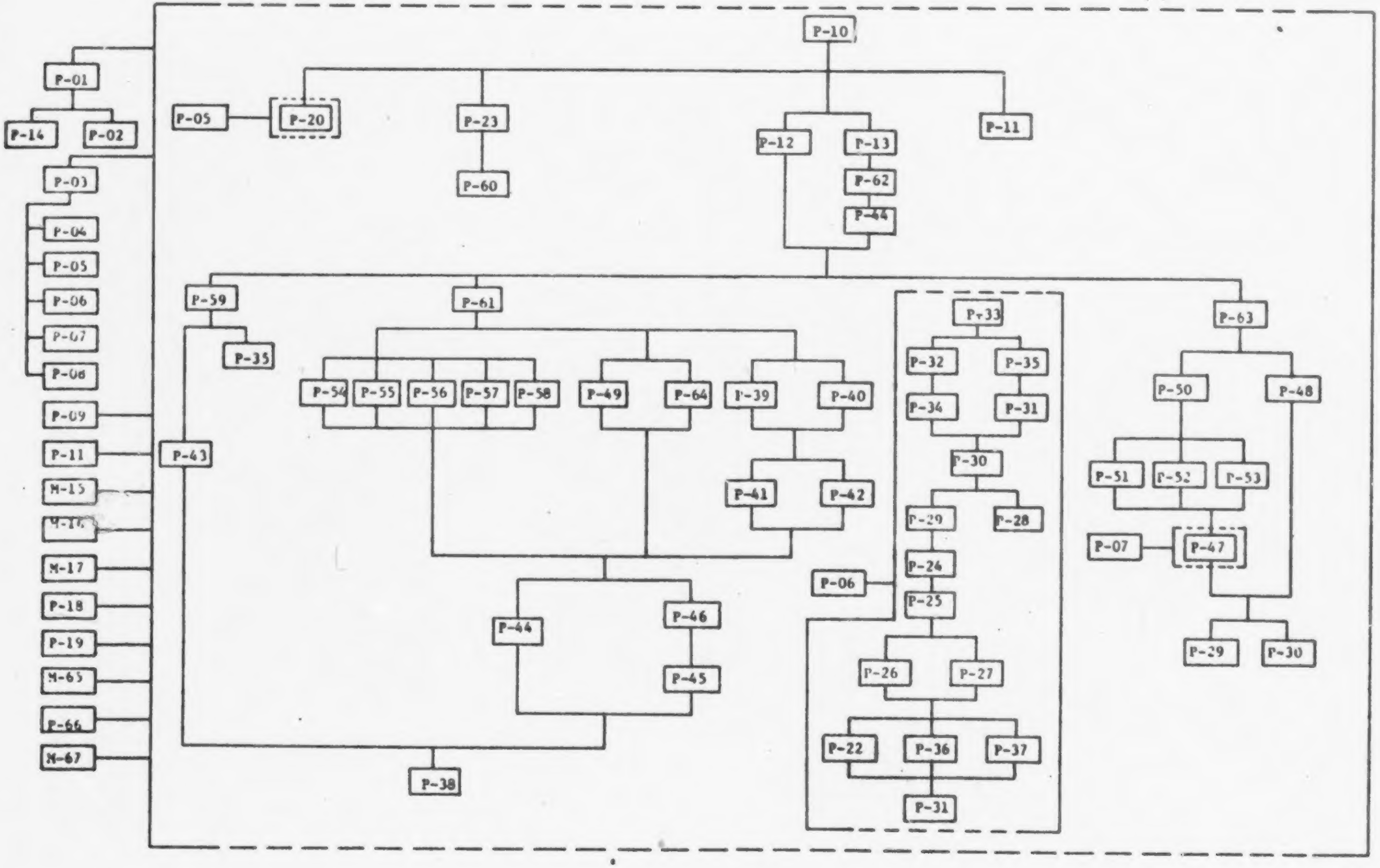
P-26	*Objectives for OCE Students*. This product is to provide a statement of objectives relative to the secondary education department at the Oregon College of Education. It will determine the relationship of the department's objectives to the development of protocol materials and thus determine, in part, the priorities for the protocol films to be made.	development
P-27	Objectives for High School Students	development
P-28	Protocol Development Plans	development
P-29	Terminal Performance Objectives for Protocols	development
P-30	*Protocol Specifications*. In order to produce protocol materials, the staff is having to define what a "protocol" is. This involves determining the differences between protocol films and training films, thus specifying the determiners of a protocol and a training film. In addition, behavioral objectives must be specified around which protocols are to be developed, and these objectives must be translated into learner outcomes.	development
P-31	Typescripts of Films	development
P-32	Specifications of Filming Techniques	development
P-33	Protocol Films	development
P-34	*Storyboards (Scenarios)*. The storyboard or scenario provides a map which can be used to produce a film. In order to write a storyboard, the staff members (that is, the two research assistants at OCE and the Adams coordinator) must determine the learning outcome(s) of the film. They describe situations that will appear on the film, particularly the specified behaviors that can be interpreted by the viewer as indicators of the concept (commitment to learning, constructive sense of self, analysis, and evaluation are four examples of concepts to be represented on film).	development
P-35	Audio Tape Protocols	development
P-36	Description of Learner Population	evaluation
P-37	Description of Context for Use of Protocols	development

P-38	Evaluation Plan. In order to evaluate the materials being produced, it is necessary to be able to define and then to measure the objectives of the intended instruction. Instruments are being devised which will enable the staff to make these measurements. The Project Director is taking the responsibility for constructing and/or specifying the instruments to be used in the preliminary field trials and the national operational field trials. Criteria for the selection of field trial sites are being formulated by the Project Director and his staff.	development
P-39	Interview Strategy	development
P-40	Observation Strategy	development
P-41	Staff Questionnaire	development
P-42	Student Questionnaire	development
P-43	Tutorial Field Test Design	development
P-44	Cross-site Field Test Design	development
P-45	National Field Test Design	development
P-46	National Field Test Site List	development
P-47	User's Manual for Protocols	development
P-48	Student Information Sheets	development
P-49	Student Exercise Sheets	development
P-50	Advance Organizers	development
P-51	Advance organizer A	development
P-52	Advance Organizer B	development
P-53	Advance Organizer C	development
P-54	Specifications for Practicum Experience	development
P-55	Student Analysis Form	development
P-56	Instructor Analysis Form	development
P-57	Thurstone-type Attitude Scale	development
P-58	Faculty Implementation Analysis Form	development
P-59	Tutorial Field Test Data	evaluation
P-60	Conceptual Papers on Learner Outcomes and Human Development	research
P-61	Field Test Evaluation Guide	development
P-62	Instructional Memos to National Field Test Sites	diffusion
P-63	User Materials	development
P-64	Evaluation Practice Sheet	development
P-66	Description of Project. The Project Director, in monitoring the activities of the project staff, has written a description of the various phases of the project and has referred his description to others for suggestions and comments.	evaluation

Index of management outcomes. The following is a listing of those management outcomes identified from the Protocol Project.

No.	Management Outcome Label	Management Outcome Focus
M-15	Acquisition of Equipment	development
M-16	Acquisition of Operational Supplies	development
M-17	Acquisition of Office Space	development
M-65	Communication with Secondary Education Department Chairman and Staff. By engaging in periodic discussions with the OCE Secondary Education Department Chairman and by involving the Secondary Education Department staff in some of the decision-making relative to protocol development, the project management intends to maintain a communication flow which will insure a high quality level of production and satisfactory working relationships with the college.	diffusion
M-67	Two-day Retreat. A retreat was held for the purposes of clarifying the roles of personnel and for giving individual members a better understanding of the project's goals and procedures. In addition, a review was made of the activities of various staff members, and an opportunity was provided for interaction among all of the personnel involved in the project.	development

Output map. Figure 3 is an output map showing the dependent relationships between the outputs of the project. The relationships identified are not necessarily sequenced over time.


P-10
P-01
P-14
P-02
P-05
P-20
P-23
P-60
P-12
P-13
P-62
P-44
P-11
P-03
P-04
P-05
P-06
P-07
P-08
P-09
P-11
M-15
M-16
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P-26
P-27
P-22
P-36
P-37
P-31
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P-51
P-52
P-53
P-07
P-47
P-29
P-30

FIG. 3. Output map.

Chapter III: Summary of the Data

Data were gathered around the selected outputs by means of interviews with knowledgeable staff. The interviews sought to elicit for each output the standards by which the satisfactory completion of the output is judged, the tasks required to generate an output meeting those standards, and the enablers (knowledges, skills, and sensitivities) which facilitate the carrying out of those tasks. Interviewee statements were categorized subsequently into somewhat more general statements, for purpose of providing more standardization of reported information. Tables 2-7 summarize the data in these categories by showing how frequently an item of interview information was cited within one of these categories.

Within each category are a series of descriptive labels which are representative of interviewee statements. These descriptive labels are listed in the tables under the category heading. In the process of reducing raw (interview) data, narrative interviewee statements about an output were linked to one of the category sets. Each narrative statement was then classified by means of a number code according to the most representative descriptive label within a given category or subcategory.

Each table, therefore, provides the frequency with which interviewees cited specific statements (which are represented by the descriptive labels in the tables) of standards, tasks, and enablers in relation to each output.[1]

Standards Held for Outputs

The standards cited for the adequacy of the outputs of the project are treated in Tables 2 and 3. In general, acceptance by others a higher staff level) was a criterion often used to determine whether a product was satisfactory or not. Because the project personnel were careful to aim at specified learner outcomes in producing storyboards, plans, and the like, the criterion of goal attainment was also mentioned as being important in determining the quality of an output.

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[1] If the reader is interested in the narrative statements of the interviewees, these can be found in the Appendix. To locate the narrative statement for any given category, first note the output and its identification number in the table. Second, note that each descriptive label within a given category has a distinct number or code. Turn to the Appendix and locate the output. Under the output locate the category label or heading (standard, task, or enabler) and pinpoint the number or numbers (depending on the frequency cited) of the descriptive label which appeared in the table. The statement in the Appendix opposite this number is the original narrative statement from an interviewee and is only represented in the tables by its descriptive category label and code number.

TABLE 2

Output Standards Cited for Each Output Analyzed

Project Outputs No. Label	Primary Categories of Standards for Outputs (Category code no. and label for coding set J-1) 04 Communication and clarity	07 Personal satisfaction/feeling	12 Goal attainment	13 Acceptance by others (in proj)	21 Sources of variance controlled	22 Functions as planned	23 Successfully constrains/guides	30 Lack of negative feedback	Output Totals
P-11 Progress Report				1					1
P-23 Taxonomy of Learner Outcomes			2						2
P-34 Story Boards (Scenarios)	1		2	3		1	3	1	11
P-38 Evaluation Plan			1		1				2
P-66 Description of Project		1							1
CATEGORY TOTALS	1	1	5	4	1	1	3	1	17

TABLE 3

Process Standards Cited for Each Output Analyzed

Project Outputs No. Label	Primary Categories of Standards for Processes (Category code no. and label for coding set J-2)							Output Totals
	10 Maximum possible participation	26 Values and objectives match	27 Decisions result in action	28 Closure reached on questions	34 Impact of effort favorable	41 Guidelines are followed	42 Revision yields improvement	
P-34 Story Boards (Scenarios)		1			1		1	3
P-38 Evaluation Plan						1		1
M-67 Two-day Retreat	1		1	1				3
CATEGORY TOTALS	1	1	1	1	1	1	1	7

Tasks Pertaining to Output Attainment

Prominent among the types of tasks (Table 4) required in generating outputs were identifying and clarifying the problem, formulating objectives, and actually producing the output. In producing plans for evaluating the protocols, designing was the most frequently cited task. Identifying and clarifying the problems involved in devising plans was also mentioned.

Enablers Pertaining to Output Attainment

Among the knowledges (Table 5) required to perform the tasks, information outside the project context was cited more frequently than was either information generated within the project or knowledge of technical subjects. The nature of the project is such that considerable knowledge of classroom situations and of children is necessary in order that realistic scenes be presented on film. Accordingly, the experiences of the staff members have proved to be invaluable to them in planning film sequences which can present the four concepts of commitment to learning, constructive sense of self, analysis, and evaluation (the last two from Bloom's Taxonomy of Educational Objectives).

TABLE 4

Tasks Cited for Each Output Analyzed

Project Outputs No.	Label	01 Clarifying problem addressed	02 Formulating objectives	03 Designing the output	04 Producing the output	05 Collecting/processing data	06 Assessing the output quality	21 Procuring professional staff	22 Effecting accountability	23 Procuring systems/services	24 Effecting quality control	25 Maintaining job satisfaction	26 Facilitating growth of staff	29 Facilitating relationships	30 Effecting info within project	31 Diffusing info within project	33 Effecting decision mechanisms	Output Totals
P-11	Progress Reports	1			1	1	2		3		1							9
P-23	Taxonomy of Learner Outcomes		1	2												1		4
P-26	Objectives for OCE Students	1		1		1								1				4
P-30	Protocol Specifications	5	1	3	1													10
P-34	Story Boards (Scenarios)	11	11	5	8		1	1	2		3		1	4	1	5		53
P-38	Evaluation Plan	4	1	9	3	1				2					1	1		22
M-65	Maintained Communications Flow										1					1	1	3
P-66	Description Project				1						1							2
M-67	Two-day Retreat											1		5		1		7
	CLUSTER TOTALS	22	14	20	14	3	3	1	5	2	6	1	1	10	2	9	1	114

Clusters of Tasks (Cluster code no. and label for coding set NO)

TABLE 5

Enabling Knowledges Cited for Each Output Analyzed

Project Outputs No. Label	Primary Categories of Enabling Knowledges (Category code no. and label for coding set S-1) 01 Standard school subjects	02 Subjects learned in courses	03 Subjects related to RDD&E	04 Technical/professional topics	06 Project variables: external	08 Project operation: specific	23 Char's of target audience	24 Process implementation (proj)	25 Sources of info/materials	28 Group dyn/decision processes	Output Totals
P-11 Progress Reports	1										1
P-23 Taxonomy of Learner Outcomes			1	1							2
P-26 Objectives for OCE Students					3		1		1		5
P-30 Protocol Specifications		1		2	1	1					5
P-34 Story Boards (Scenarios)	3	2		2	7	5		2			21
P-38 Evaluation Plan			5			1					6
M-67 Two-day Retreat										1	1
CATEGORY TOTALS	4	3	6	5	11	7	1	2	1	1	41

TABLE 6

Enabling Skills Cited for Each Output Analyzed

Project Outputs No. Label		Primary Categories of Enabling Skills (Category code no. and label for coding set S-2)																					Output Totals
		01 Teaching	02 Facilitating people interact	03 Translating content to media	04 Using/applying feedback	06 Programming subject matter	08 Analytical reading/study	09 Analytical problem solving	11 Disciplining self	14 Writing	17 Interpreting language	18 Finding fits/integrating	19 Planning.conceptualizing	24 Explicating goals/procedures	25 Applying measurement tools	26 Locating/maintaining info	29 Getting others to perform	32 Identifying/correcting errors	34 Coordinating activities	35 Communicating clearly	46 Placing others at ease	47 Recalling	
P-11	Progress Reports					1					1							1					3
P-26	Objectives for OCE students												1	1									2
P-30	Protocol Specifications							1												1			2
P-34	Story Board (Scenarios)	1	6	1			2	2	2	3	3		4			1			1		1		27
P-38	Evaluation Plan											1		1	1								3
P-66	Description of Project				1					2		3										1	7
M-67	Two-day Retreat							1									1			1			3
	CATEGORY TOTALS	1	6	1	1	1	2	4	2	5	4	4	5	2	1	1	1	1	1	2	1	1	47

723

21 249

22 250

Enabling Sensitivities Cited for Each Output Analyzed

Project Outputs No.	Label	Primary Categories of Enabling Sensitivities (Category code no. and label for coding set S-3) 01 Values of self and others	02 Capabilities and limitations	03 Needs of self and others	04 Interactions of self & others	11 Awareness of method	12 Role of catalyst/synthesizer	13 Language barriers	18 Potential conflict of interest	22 Responses of target audiences	27 Acceptability of output	30 Response set of tgt audiences	35 Need to communicate fully	40 Contractual/stated obligations	49 Willingness to learn	50 Intellectual openness	51 Possible points of confusion	52 Awareness of staff affect	53 Creative	54 Manageability of data	Output Totals
P-34	Story Boards (Scenarios)	1	1	1			1	1	1			2	1		1	1	2	2	1		16
P-38	Evaluation Plan		2											1						1	4
M-65	Maintained Communications Flow		2		1	1					1										5
M-67	Two-day Retreat				1			1		1											3
CATEGORY TOTALS		1	5	1	2	1	1	2	1	1	1	2	1	1	1	1	2	2	1	1	28

Chapter IV: Supplementary Data

Additional data with respect to this site visit come from questionnaires obtained from the interviewees as well as classifications made of the outputs of the project. This chapter also includes a summary of staff backgrounds and requirements of the various staff positions.

Classifications of Output Characteristics

As the Oregon Studies evolved it became evident that outputs could be categorized in terms of a number of variables. Among them are (a) Structure (product, event, or condition), (b) Function (policy setting, management, or production), (c) Level (focal, component, or facilitating), (d) Character (knowledge, technology, implementation, or information), and (e) Stage of completion. These five schema are represented in Table 8 for each project output identified, with frequencies summarized for each category. Table 8 has been added to this profile subsequent to the profile's original writing.

Summary of Staff Backgrounds

Personnel data were obtained from six of the staff members. Of these, three hold doctoral degrees, two hold master's degrees, and one has a bachelor's degree. Major areas of specialization include educational psychology (2), educational administration (2), anthropology, and education/teaching. The two co-directors of the project are full-time research workers, whereas the others working on the project, with the exception of the OCE Coordinator, devote only part (i.e., half time or less) to research activities.

The work experience of the interviewees has been largely in teaching. With the exception of the Director and the OCE Coordinator, the major type of work experience of the interviewees has been public school teaching, with a range of 9 to 20 years. Three of the interviewees have had no previous experience in research. The three administrators had been engaged in research activities from 2 to 7 years. Two of the interviewees have been or are college teachers.

TABLE 8

Classifications of Output Characteristics

Project Outputs		Output Characteristic[a]																		
		Structure			Function			Level			Character (Products only)				Competion Stage					
No.	Label	p	e	c	pm	m	p	f1	c	f2	k	t	i1	i2	1	2	3	4	5	6
P-01	Proposal	X				X				X		X				X				
P-02	Project Objectives	X					X			X		X				X				
P-03	PERT chart for project	X				X				X		X				X				
P-04	Work schedule for project management	X				X				X		X				X				
P-05	Work schedule for conceptual framework	X				X				X		X				X				
P-06	Work schedule for protocol materials	X				X				X		X				X				
P-07	Work schedule for user's guide	X				X				X		X				X				
P-08	Task Timeline	X				X				X		X				X				
P-09	Articles for TR Newsletter	X				X		X					X				X			
P-10	Final Report	X				X		X					X						X	
*P-11	Quarterly Progress Reports	X				X		X						X						X
P-12	Cross-site Field Test Data	X				X			X					X					X	
P-13	National Field Test Data	X				X			X					X					X	
P-14	Budget	X				X				X		X				X				
M-15	Acquisition of Filming Equipment		X				X			X						X				
M-16	Acquisition of Operational Supplies		X			X				X						X				
M-17	Acquisition of Office Space		X			X				X						X				
P-18	New Proposal	X				X		X				X							X	
P-19	Prospectus for refunding	X				X		X				X						X		
P-20	Conceptual Framework	X				X			X			X				X				
P-21	List of Target Groups Identified	X				X				X				X			X			
P-22	List of Assessed Teacher Needs	X				X				X				X			X			
*P-23	Taxonomy of Learner Outcomes	X					X		X			X						X		
P-24	List of Learner Outcomes for Objectives	X					X		X			X					X			
P-25	Objectives for Target Population Students	X					X		X			X					X			
*P-26	Objectives for OCE Students	X					X		X			X					X			
P-27	Objectives for Adams Students	X					X		X			X					X			
P-28	Protocol Development Plans	X				X				X		X								X
P-29	Terminal Performance Objectives for Protocols	X					X		X			X					X			
*P-30	Specifications of Protocol Materials	X				X				X		X					X			
P-31	Typescripts of Films	X					X			X		X					X			
P-32	Specifications of filming techniques	X					X			X		X					X			
P-33	Protocol Films	X					X	X				X						X		
*P-34	Scenarios (Story Boards)	X					X			X		X					X			
P-35	Audio Tape Protocols	X					X		X			X					X			
P-36	Description of Learner Population	X					X		X					X			X			
P-37	Description of Context for Use of Protocols	X					X		X			X					X			
*P-38	Evaluation Plan for Protocols	X				X				X		X					X			
P-39	Interview Strategy	X				X				X		X					X			
P-40	Observation Strategy	X					X		X			X					X			
P-41	Staff Questionnaire	X				X				X		X					X			

TABLE 8 concluded

Classifications of Output Characteristics

Project Outputs		Output Characteristic[a]																		
		Structure			Function			Level			Character (Products only)				Completion Stage					
No.	Label	p	e	c	ps	m	p	f_1	c	f_2	k	t	i_1	i_2	1	2	3	4	5	6
P-42	Student Questionnaire	X				X				X		X					X			
P-43	Tutorial Field Test Design	X				X				X		X					X			
P-44	Cross-site Field Test Design	X				X				X		X					X			
P-45	National Field Test Design	X				X				X		X					X			
P-46	National Field Test Site List	X				X				X		X					X			
P-47	User's Manual for Protocols	X					X		X			X					X			
P-48	Student Information Sheets	X					X			X		X					X			
P-49	Student Exercise Sheets	X					X			X		X					X			
P-50	Advance Organizers	X					X		X			X					X			
P-51	Advance Organizer A	X					X		X			X					X			
P-52	Advance Organizer B	X					X		X			X					X			
P-53	Advance Organizer C	X					X		X			X					X			
P-54	Specifications for Practicum Experience	X					X		X			X					X			
P-55	Student Analysis Form	X					X		X			X					X			
P-56	Instructor Analysis Form	X					X		X			X					X			
P-57	Thurstone-type Attitude Scale	X				X				X		X					X			
P-58	Faculty Implementation Analysis Form	X				X				X		X					X			
P-59	Tutorial Field Test Data	X				X				X				X			X			
P-60	Conceptual Papers on Learner Outcomes and Human Development	X					X		X		X					X				
P-61	Field Test Evaluation Guide	X					X	X				X					X			
P-62	Instructional Memos to National Field Test Sites	X				X				X			X				X			
P-63	User Materials	X					X	X				X					X			
P-64	Evaluation Practice Sheet	X					X		X			X					X			
*M-65	Maintained Communications Flow			X		X				X										X
*P-66	Descriptions of Various Phases of Project	X				X			X					X						X
*M-67	Two Day Retreat		X			X				X							X			
Classification Frequencies[b]		52	4	1	0	37	30	8	24	35	1	50	3	8	0	14	42	3	4	4

[a] The specific output characteristics are identified as follows:

Structure

p - product
e - event
c - condition

Function

ps - policy setting
m - management
p - production

Level

f_1 - focal
c - component
f_2 - facilitating

Character

k - knowledge
t - technology
i_1 - implementation
i_2 - information

Completion Stage

1 - completed over one year ago
2 - completed 3 to 12 months ago
3 - completed within last 3 mos.
4 - currently in progress
5 - not yet underway
6 - on going (continuous)

[b] Data totals in this table may vary slightly from data in tables reported elsewhere. This is a function of decision rules governing classification of outputs having been revised and applied to these data subsequent to the preparation of the profile.

The most frequently cited aspect of professional training considered relevant to this project was the course work taken by the interviewees in college. Psychology, sociology, anthropology, statistics, measurement, and English were mentioned as courses which have proved helpful in connection with the work of this project. Also prominently mentioned was on-the-job training in research, specifically research concerning instructional media and curriculum construction. Writing experience was considered as very important by one interviewee.

Summary of Position Requirements and Support System

The Director and Co-director of the project responded to questions concerning the requirements for their positions in similar ways, emphasizing experience in instructional development and research experience (the management, organization, and evaluation of research efforts). The Co-director, who has had considerable teaching experience, also cited teacher education and teaching experience as requirements for the position. The two coordinators who responded emphasized learning theory as important in their jobs, one citing a knowledge of preadolescent and adolescent psychology as a requisite. The two research assistants cited the same kinds of requirements as did the directors and coordinators, adding experience in film writing (which was their major task) and statistics.

Among the services needed for this project are duplicating and distributing systems, secretarial services, typing, library services (including requests for documents), photography, statistical computation, accounting, audio-visual aids (including television facilities), film editing, and subjects for experimentation. By virtue of the nature of the project, many different kinds of educational media services are needed.

Summary of Inservice Training Experiences of Staff

Because the Protocol Project is one of a dozen such projects which have been funded throughout the country, training institutes have been held for the directors of the projects, with additional institutes scheduled during the remainder of the academic year. In addition, members of this project held a retreat which has served to train and acquaint all of the staff in the theoretical and practical issues which are being encountered. Frequent staff meetings also serve to brief members on developments and to focus attention on current and future problems.

Chapter V: Project Dynamics

Leadership of the Protocol Project was centered in three people. First, the Special Resource Person was instrumental in originally conceptualizing the project, writing the proposal, and obtaining funding. He holds the academic rank of "professor" and devotes 20% of his time to this project. The remaining 80% of his time is devoted to directing a "program" at Teaching Research which consists of several projects in addition to the Protocol Project. In effect, he contributed intellectual and conceptual leadership to the project. The second point of leadership was in the contribution of the Project Director. Devoting 40% of his time to this project, his primary contribution was seen to be the planning and guiding of overall project efforts and promoting interagency coordination. The third person charged with a primary leadership role was the Co-Director. She, like the Director, devotes .40 FTE to the Protocol Project. This person primarily assumed the role of project manager and was concerned with work-scheduling, monitoring, and training.

Within each of the two other collaborating institutions (Oregon College of Education and John Adams High School) another leadership role was seen in a "coordinator" for the efforts of each of these agencies. While the Adams coordinator contributed his full time (1.0 FTE) to this project, the OCE Coordinator carried teaching duries allowing only .25 FTE for the Protocol Project. The OCE coordinator guided the production efforts of two Research Assistants. The Adams coordinator assumed the production role, utilizing various consultants within his organization to assist his efforts.

Figure 2 (Chapter II) graphically displays the organizational pattern described above. Several of the interviewees expressed the feeling that the project had "lots of chiefs but few Indians." Within the Teaching Research portion of the organizational chart, the title of "Co-Director" may appear to be a misnomer. Although the Director and Co-Director were assigned to the project with equal FTE (.40), and were considered of equal status by the parent agency, the interviewees generally appeared to consider the Director as the primary leader of the project and the Co-Director as the manager. The tasks performed by these individuals appeared to support this view of their activities and relationships.

The staffs of OCE and Adams High School were relatively inexperienced in the area of materials development. Although each of the staff members had experience in the utilization of various audio-visual teaching materials, they had no knowledge of production techniques. Actual production was to be accomplished by a subcontractor, but the preparation of storyboards and scripts for guiding production required knowledge beyond that possessed by the project's writers. This deficiency required an unexpected effort to be made in training.

The necessity for training and subsequent follow-up monitoring of work efforts made almost daily communication necessary. In this area additional unexpected difficulties were encountered. Since the two OCE Research Assistants were half-time students, their availability for meetings was somewhat curtailed. In addition, their offices were not equipped with telephones which imposed a burden on clerical personnel outside of the project. The Adams High School coordinator had only part-time clerical assistance from the school's regular clerical personnel. His location (65 miles away) precluded easy access to the Teaching Research facilities, and travel time to Teaching Research made his attendance at frequent meetings difficult. To offset some of these problems, a retreat was planned so that all personnel could more easily coordinate their efforts.

The interviewees from each of the collaborating agencies indicated that each institution held differing, although not necessarily conflicting, objectives and goals for their participation in the project. Teaching Research, as holder of the contract for the project, saw the project producing exemplary protocol materials, establishing a prototype set of procedures for the development and testing of such materials, and providing an opportunity to carry out basic conceptual work in regard to classes of learner outcomes. They also saw the project as a vehicle to further cooperative relationships with Oregon College of Education and John Adams High School.

OCE and Adams High School saw the project primarily as a means of producing materials that would be of value in their own teacher training programs. Since the particular focus of the OCE desire was for materials in support of secondary teacher education at the *preservice* level and the particular focus of the Adams desire was for materials in support of secondary teacher education at the *inservice* level, the interests and the conceptual approaches of these two institutions were somewhat diverse.

The differing viewpoints of the three, cooperating organizations have caused special effort to be made on the part of Teaching Research to maintain a common focus in this developmental project. The degree to which Teaching Research is successful in this effort will likely depend upon the degree to which the people from each institution begin to see that their differing needs or interests are being met.

Chapter VI: Implications for Training

This chapter summarizes the data obtained from the interviewees regarding training needs for professionals in educational research, development, diffusion, and/or evaluation.

In several ways the Protocol Project is typical of projects in which people must be trained on the job. At the inception of this project no one was certain--not even the advisors to the 12 protocol materials projects throughout the country--what protocol materials would look like when they were produced. Therefore, in a real sense, everyone on the project is being trained on the job.

A background in film making for project personnel is obviously needed if the decision is made to use the film medium for protocol materials. In addition, since the project is concerned with developing a taxonomy of learner outcomes and accompanying ancillary materials, experience in writing curriculum materials is highly desirable.

Both practical experience and academic preparation were cited by the interviewees as being valuable to staff members. The Co-director indicated that course work in psychology, sociology, anthropology, and English was most important in preparing for the project duties of that position. The OCE Coordinator indicated as important academic preparation in statistics, experimental design and measurement.

In general, the administrators who held doctorates emphasized the importance of having directed other projects and of having the proper academic preparation for their positions on the project. The research assistants, on the other hand, naturally felt that both practical experience in the classroom and a genuine understanding of children and teaching problems were necessary in carrying out their functions. Both the administrators and assistants agreed that communication skills are important to persons who engage in projects of this nature. In his response to questions concerning training for jobs such as his, one of the research assistants emphasized personal qualities such as open-mindedness and imaginativeness. He also mentioned a quality that probably makes all the difference in any project, namely, a belief in the worthiness of the undertaking (and with it, perhaps, dedication to a cause).

Appendix

Appendix: Listing of Output Standards, Tasks, and Enablers

The following is a list of standards, tasks, and enablers for outputs around which interviews were conducted. These statements were extracted from discussions with interviewees and were coded into their respective category sets. The selected code precedes the statement and indicates the following for:

STANDARDS

Code J: Structure of Standards.

J-1 Standards against which outputs are judged. (output oriented)

J-2 Standards against which processes and/or operations are judged. (process oriented)

Code LM: Primary Categories of Standards.

TASKS

Code NO: Clusters of Tasks.

ENABLERS

Code S: Structure of Enablers.

S-1 Knowledge.

S-2 Skill or ability to perform.

S-3 Sensitivity or awareness.

Code UV: Primary Categories of Enablers. (knowledges, skills, or sensitivities)

The codes associated with these three categories (standards, tasks, or enablers) are the same both here in the listing and as previously cited in Chapter III tables.

Each of the nine analyzed outputs is cited below in a rectangular box. Included within each box is the level of the output (i.e., focal, component, or facilitating) and the status of the output at the time of interview. Listed under each box are the interviewee statements relevant to that output.

P-11: Progress Report
Level: Focal
Status: Ongoing

STANDARDS:

J	LM	
1	13	Director accepts report (with only minimal changes).

TASKS:

NO	
01	Study format (topic outline) of report (supplied by Director).
22	Direct staff to submit summaries of work done.
05	Extract the essential items from staff summaries.
04	Write report in rough draft form.
06	Edit draft of report into final format for rough typing.
24	Submit rough-typed report to Director for review.
22	Direct secretary to type final copy of report.
06	Proof-read final typing.
22	Direct secretary to duplicate and mail report.

ENABLERS:

S	UV	
1	01	Knowledge of basic English and grammar and vocabulary.
2	06	Skill in logical organization (of budget categories)--"Looking at it as a reader might."
2	17	Skill in recognizing jargon.
2	32	Skill in editing other people's copy.

P-23: Taxonomy of Learner Outcomes
Level: Component
Status: In Process

STANDARDS:

J	LM	
1	12	Groups of behavior are generated which are amenable to protocol development.
1	12	Protocols (or behaviors) could be accounted for and classified by the taxonomy.

TASKS:

NO	
31	Participated in discussions dealing with issues relative to the development of taxonomical schema.
02	Determine how behavior can be classified.
03	Specify the broad categories of behavior.
03	Attempt to understand how the taxonomy could fit into the development of specific protocol materials.

ENABLERS:

S	UV	
1	03	Knowledge of what has been done in the field relative to taxonomies (in education).
1	04	Knowledge of human behavior.

P-26: Objectives for OCE Students
Level: Component
Status: Completed

STANDARDS:

No information collected under this heading.

TASKS:

NO	
29	Provide statement of objectives relative to the secondary education department (at a teachers' college).
05	Rank ordered the (above) objectives.
03	Determine relationship of department's objectives to the development of protocol materials.
01	Determine priorities of protocol development.

ENABLERS:

S	UV	
1	23	Knowledge of student response and needs in a (teacher) training program.
1	25	Knowledge of what is available in terms of materials.
1	06	Knowledge of where you are going (secondary education program).
1	06	Knowledge of (department's) needs relative to instructional materials.

1	06	Knowledge (based on experience) of what seems to be successful/unsuccessful in terms of student performance and efficacy of instruction--referring to mode of instruction, such as media which in turn links to type of needed instructional materials.
2	19	Ability to determine how a protocol will fulfill those needs.
2	24	Ability to determine department needs in terms of the secondary education program.

P-30: Protocol Specifications
Level: Facilitating
Status: Completed

STANDARDS:

No information collected under this heading.

TASKS:

NO	
01	Determine the meaning of a "protocol."
01	Determine the differences between a protocol and a training film.
01	Specify the determiners of a protocol.
01	Specify the determiners of a training film.
04	Prioritize Bloom's taxonomy in terms of protocols that are to be developed relative to a specific objective or level.
02	Select an objective (or objectives) around which a protocol is to be developed.
01	Consider time and budgetary constraints in the number of objectives to be selected for protocol development.
03	Translate objectives into learner outcomes.
03	List ways in which one could evidence those learning outcomes.
03	Determine whether protocol film should be process or product oriented.

ENABLERS:

S	UV	
1	02	Knowledge about instructional techniques in education
1	04	Knowledge as to how learning occurs.
1	04	Knowledge of human behavior.
1	06	Experience/background in classroom instruction.
1	08	Knowledge of determiners of what constitutes a protocol.

P-34: Storyboards (Scenarios)
Level: Facilitating
Status: Completed

STANDARDS:

J	LM	
2	26	Apparent mutual understanding of direction of effort is achieved.
2	42	Each rewrite of scenario improves it.
1	22	Scenario conveys intended education message.
1	23	Scenario effectively guides production.
1	12	Checklist showed students in the protocol were successful in their analyzing.
1	13	College coordinator approved the storyboard idea.
1	23	On the films the students were doing what they were supposed to be doing (such as analyzing).
1	23	The students were saying "what they were supposed to say" (according to a prepared checklist).
1	12	Components of a storyboard appropriately represent the specified concept.
1	04	Relatively "uncluttered" from a lot of extraneous ideas.
1	13	College Coordinator approved the idea for a storyboard.
1	13	Co-Director approved the rough script (of a storyboard).
1	30	"When they don't send it back and say, 'Do it again!'"
1	07	"I feel that it's pretty well ready to go."
2	34	When someone says, "It's coming along."

TASKS:

NO	
01	Read literature relative to the subject matter.
02	Read proposals (for protocols) from other organizations.
01	Make notes of important items found from study.
01	Read assigned material with associate.
02	Discuss assigned materials with associate.
31	Call and participate in staff meeting.
29	Interpret background material to achieve mutual understanding.
31	Participate in open discussion to achieve clarity and understanding.
22	Schedule work sessions with junior staff.
31	Conduct work sessions with junior staff.
26	Interact with junior staff to guide their efforts.
21	Teach junior staff to use consistent terminology.
24	Read scenarios which were written by the staff.
06	Note advisable corrections to scenarios.
31	Discuss recommended changes with writer.
22	Direct writer (junior staff) to rewrite.
30	Act as catalyst to discussion to bring issues to foreground.
02	Come up with ideas for the content of final protocol films.
01	Examine ways Bloom's Taxonomy of Educational Objectives could serve as a basis for content of the protocol.

03 Determine what elements are to be used in the analysis activity to be used in the protocol.
03 Determine how the elements relate to one another.
02 Confer with high school coordinator about scenario ideas.
02 Confer with fellow research assistant about scenario ideas that are generated.
02 Confer with Co-Director about the scenario ideas.
01 Do library research about how advertisers try to sell their products.
04 Write indicators (that is, responses of students) which would show that the students in the film were demonstrating the ability to evaluate.
29 Inform teachers (in scenarios) about the objectives of the film.
04 Write ideas that the (scenario) teacher might elicit from his students (on the film).
29 Discuss with the television teacher background information concerning the concepts presented.
29 Discuss the ideas and activities to be filmed with the student.
02 Talk with the college coordinator and project directors about the storyboards.
04 Outline the composition/content of a storyboard.
03 Determine specific examples representative of the objective.
04 Specify the objective--which is a component of the storyboard.
04 Specify the learning outcomes--which is a component of the storyboard.
02 Describe the background information for the situation that will appear on the protocol film which is a component of the storyboard.
04 Describe the situation that will appear on the film which is a component of the storyboard.
04 Describe the behaviors of kids that will be accepted as evidence that the objective has been achieved which is a component of the storyboard.
03 Determine the purpose of the storyboard--describe the situation and intent of the protocol film; serves as a basis for the production of films.
04 Develop a mock-up/prototype storyboard.
24 Review/critique storyboard.
24 Monitor the work/production of a storyboard.
31 Answer questions/assist in solving problems relative to the development of the storyboard.
01 Identify the problems for storyboards.
01 Evaluate what has been done in terms of the concept we are trying to illustrate.
01 Consult curriculum guides and teacher manuals for ideas for protocol films.
02 Consult persons in field, such as teachers, for ideas about protocol films.
03 Determine the process (e.g., analysis) to be illustrated on film.

02	Consult with coworker concerning storyboard ideas.
02	Consult with college coordinator about materials which might be used.
02	Consult with college coordinator about storyboard ideas.
01	Read Bloom's Taxonomy of Educational Objectives.
01	Read a variety of materials for ideas for storyboards.

ENABLERS:

S	UV	
1	01	Know normal school subjects (high school).
1	04	Know enough about the subject to see relationships even if the author's words are different.
1	04	Know learning theory.
1	06	Know normal classroom activities.
1	06	Know normal classroom appearances.
1	06	Know normal student reactions.
1	08	Know the purpose for which you are reading.
1	08	Know project objectives.
1	24	Know tasks that others must do.
1	24	Know housekeeping details (where to get type).
2	02	Able to interact effectively face to face with junior staff.
2	02	Serving as a catalyst without hurting either party.
2	08	Ability to sift and sort and evaluate.
2	08	Skill in analytical reading.
2	08	Skill in analytical thinking.
2	09	Recognize need for acting as a catalyst.
2	09	Able to exercise patience in working with junior staff.
2	11	Able to accept junior staff capabilities (do not down grade)
2	17	Translating information into project terms
2	17	Translating progrssional shorthand (jargon) into terms understood by junior staff.
2	19	Sense of organization of work effort.
2	46	Reassuring staff in face of apparent ambiguity.
3	02	Aware of content in which colleagues work.
3	03	Sensitive to junior staff needs (materials).
3	12	Recognizing the effective time to act as catalyst.
3	13	Attention to vocabulary as clues to misunderstanding.
3	18	Alert to trouble spots before they get bad.
3	49	Willingness to learn from others (authors, etc.).
3	50	Intellectual openness in dealing with staff.
3	51	Alert to junior staff points of confusion.
3	51	Alert to cues that junior staff is confused.
3	52	Attention to affect (junior staff effort).
3	52	Aware of impact of ambiguity (on staff).
1	06	Familiarity with what goes on in school and "the total teaching situation."
1	06	Understanding what children can do (academically).
2	19	Imagination of concepts which can be taught on film.
2	14	Writing ability to express concepts on the scenarios.
2	02	Ability to "work with kids."

2	19	Ability to organize details.
2	02	Ability to communicate with other people on the project.
2	14	Writing ability.
2	02	Ability to work with students.
2	34	Being able to take care of details.
2	02	Ability to communicate with coworkers (being able to understand what the other person is saying).
3	30	Understanding about perceptions and feelings of young people (trainees).
3	01	Understanding that everyone has his biases and these have "to be put in the table and recognized."
3	30	Sensitive to children's feelings.
3	53	Imagination--"a bit of creativity."
1	02	Understand Bloom's taxonomy.
1	08	Know the purpose of a storyboard.
1	08	Know what the project is about--its purpose.
1	08	Knowledge of mental processes--that they do in fact exist, such as "analysis."
2	01	Ability to communicate what a storyboard might look like for a particular objective or concept.
2	03	Ability to write/develop a model to aid in the understanding of the process of storyboard development.
2	19	Ability to conceptualize what a storyboard might look like.
1	01	Knowledge of subject matter of film (e.g., math or advertising).
1	06	Knowledge derived from classroom experience.
1	06	Experience as an actor.
1	01	Knowledge of literature and/or drama.
1	02	Knowledge of cognitive levels (Bloom's Taxonomy).
2	14	Skill in script writing.
2	17	Translate what is written in curriculum guides to a classroom situation.
2	65	Skill in doing library research.
3	35	Be sensitive to the lines of communication being open.

P-38: Evaluation Plan
Level: Facilitating
Status: Completed

STANDARDS:

J	LM	
2	41	Feel sure that the evaluation will get the data wanted because the ideas were derived from the consultant's ideas as expressed in written documents.

1 12	Data collected helps make decisions.
1 21	Instruments used have undergone as many as seven validations in a previous study.

TASKS:

NO	
01	Familiarize self with project objectives.
01	Familiarize self with objectives of instruction as defined within the project.
01	Identify related learning system characteristics for measurement from experience on low-cost project.
03	Identify instruments to measure objectives of instruction and system characteristics.
01	Define terms in contractual commitment (such as "generalizability") as system characteristics to allow measurement..
04	Modify instruments to fit the project evaluation measures.
03	Specify a three phase evaluation plan from the instructional development system developed in another project: (a) Tryout and revision, (b) preliminary field trial, (c) national operational field trial.
04	Outline tryout and revision procedures in informal meetings with staff
05	Tryout the protocol tapes to assess the need for revision.
02	Discuss any suggested changes with staff.
23	Select diverse (in instructional viewpoint) institutions (a college and a high school) to develop and test each others materials.
03	Specify exchange of materials and data collection between a college and a high school as the preliminary field trial which was to measure generalizability.
03	Specify the instruments to be used in both the preliminary field trial and the national operational instruments.
03	Specify acceptability levels of measurement for the instruments.
03	Write one paragraph procedure statement for each instrument.
03	specify that the national operational field trial: (a) be administered by mail, (b) that materials be sufficient for self administration, (c) that developers of the protocols not be involved in the field trials themselves, and (d) that test sites try both sets of protocols both as suggested and in any means they chose so long as they explain how they used them.
23	Meet with staff to determine the number of and the institution to participate in the national field trial given financial and staffing constraints.
03	Discuss criteria for selection of sites based on experience from low-cost project.
31	Write weekly memos to participating sites to inform their representatives of (a)aspects of the project with which they should be familiar, (b) other sites participating in the trial, and (c) responsibilities in carrying out the field trial in the form of a sequencial check-list.

30 Design the memos to stand out and call attention so that they will not be forgotten or misplaced.
03 Specify interviews as a final data collection measure to collect all other relevant data.
04 Select a set of questions for the interviews from experience with possible questions sets.

ENABLERS

S	UV	
1	08	Familiarity with goals of project and materials, the constraints in literature sources, and with the request for proposal.
1	03	Know what, why, and how to evaluate the materials.
1	03	Familiarity with models which measure what, why, or how evaluation.
1	03	Familiarity with literature sources on evaluation design.
1	03	Familiarity with articles on evaluation.
1	03	Knowledge of instrument selection and fabrication.
2	18	Able to relate specific objectives to the goals of the project.
2	25	Able to measure how the system is used, i.e., implementation, analysis.
2	24	Skill in citing procedures.
3	02	Sensitive to how much a student will take before he says, "You're evaluating me more than you're teaching me."
3	54	Sensitive to manageability of data, i.e., collect only as much as you can analyze.
3	02	Sensitive to what faculty will stand for in terms of amount of reading and time required.
3	40	Sensitive to the goals of the project.

M-65: Communication with Secondary Education Department Chairman and Staff
Level: Facilitating
Status: Ongoing

STANDARDS:

No information collected under this heading.

TASKS:

NO	
31	Engage in periodic discussions with Secondary Education Department Chairman to discuss progress and/or status of the project.
33	Attempt to involve Secondary Education Department staff in some of the decision making relative to protocol development.
24	Ensure protocols reflect the objectives of the Secondary Education Department by periodic discussions with the department's staff.

ENABLERS:

S	UV	
3	02	Sensitive to the amount of information that is to be presented to a person
3	02	Consideration of another person's time or schedule.
3	04	Sensitive to the nonverbal cues which may be transmitted by the person(s) to whom you are talking.
3	11	Sensitive as to the directness with which you deal with the information and present it.
3	27	Sensitive to the timing of the information presentation.

P-66: Description of Project
Level: Component
Status: Ongoing

STANDARDS:

J	LM	
1	07	Author feels satisfied with what has been written.

TASKS:

NO	
04	Write descriptions of the various phases of the project.
24	Subject writings to scrutiny of other project and department staff for suggestions and comments.

ENABLERS:

S	UV	
2	04	Ability to interpret and make some analysis of things that have occurred.
2	14	Ability to write clearly and succinctly.

2	14	Technical skill of writing and presentation.
2	18	Ability to evaluate the worth of something in terms of questions like productivity; value to the department, etc.
2	18	Ability to identify important issues--and recognize their importance.
2	18	Ability to judge whether something is really worth pursuing and discussing or if it is inconsequential.
2	47	Mental skill recall.

M-67: Two-day Retreat
Level: Facilitating
Status: Completed

STANDARDS:

J	LM	
2	10	Problems concerning role, responsibility, and decision making are openly discussed.
2	28	Individual staff members indicate verbally a clearer understanding of the project goals and procedures.
2	27	Decisions reached in the meetings result in operational plans for continuing the work of the project as efficiently as possible.

TASKS:

NO	
29	Resolve confusion in project staff concerning responsibility and decision making by group discussion.
29	Clarify project tasks for the staff by group discussion.
29	Refine indicators of learner outcomes by pooling of ideas in group discussion.
29	Review what staff members are doing in project, in group, to promote communication.
25	Clarity for particular staff members that have caused some problems in the work of the project, what the source of those problems are and how they can be resolved.
31	Present personal project work (storyboards) to the whole staff in group and defend work conceptually.
29	Interact with other staff to clarify concepts and personnel problems.

ENABLERS:

S	UV	
1	28	Knowledge of the basic principles of group dynamics.

2 35	Able to use words effectively with individuals in a group.
2 29	Able to guide an individual, usually in a group, back to the task at hand when he or she starts in a direction that is inappropriate to the task.
2 09	Able to synthesize verbal input from many people in the group to articulate group goals and objectives.
3 13	Sensitive to what certain words mean to different people.
3 22	Sensitive to the structured or unstructured approaches that different people take to a group process like a retreat.
3 04	Sensitive to how own behavior effects others in the group.

CASE PROFILE NO. 14

Written by

Norman H. Crowhurst

PROJECT TITLE: Development of a Multimedia Course in Leadership for the U.S. Naval Academy

(ANNAPOLIS Project)

AN EDUCATIONAL PROJECT CONCERNED WITH BOTH DEVELOPMENT AND RESEARCH: through the vehicle of pilot application of a multimedia course in Leadership, Psychology and Management. By DEVELOPMENT of the materials in multimedia units, an optimized course results. Data derived from such pilot use of the materials is used as a RESEARCH base to determine possible influence of media on learning, as related to parameters of media, course content, and student preference.

A PROJECT OF:

Westinghouse Learning Corporation
2083 West Street
Annapolis, Maryland 21401

This profile has been prepared according to

PROFILE FORMAT No. 1

Three profile formats are represented in this volume.
The reader should refer to this number when making
use of the reader's GUIDE to the profiles.

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Chapter I: Overview

This chapter contains a narrative introduction to the Annapolis Project, including the objectives, rationale, and significance of the project and the context in which it operates.

Synopsis of the Project

Title: Development of a Multimedia Course in Leadership for the U.S. Naval Academy.

Responsible Institution: Westinghouse Learning Corporation.

Funding Source:
1. U.S. Office of Education.
2. Westinghouse Learning Corporation.

Funding Duration: June 28, 1968 to June 26, 1971. (36 months)

Observation Date: January 1971.

Present Stage of Development: Near final in course development; midway in research aspects.

RDD&E Focus of Project: Dual foci: Educational research and development, with a strong secondary focus in evaluation, coupled with the primary or research focus.

Expected Outcomes:
1. A multimedia course in Leadership for the U.S. Naval Academy.
2. Extended knowledge about learning from the media used, obtained from the research.

Level of Funding and Duration: Medium-High. (level 4 of 7 levels)

Agency Setting: Industry-sponsored instructional materials corporation.

Setting of Primary Location of Work Efforts: University. (Naval Academy)

Staff Summary (current):

Staffing on this project has fluctuated widely over the project's duration; thus, total full time equivalence in man years is difficult to compute. Personnel, both professional and support, are full time for the duration of their employment on the project.

The number of staff formally interviewed was 12, with more being interviewed informally. The latter interviews obtained little hard data, but did provide some of the contextual data that is utilized in this case profile.

Objectives, Rationale, and Significance of the Project

Objectives. This project has two primary thrusts:

1. The development and production of a multimedia course in Leadership, Psychology and Management for the Naval Academy, as an improvement on the traditionally taught course. This change is one for which the Academy felt a need.

2. Research into the relative merits of various media available for various subject content handling, and into the relative importance of different variables connected with the use of various media.

The Academy benefits from the project by receiving the improved material, while the Corporation receives the benefits of the research findings.

Rationale. To correspond with the two primary thrusts of the project, each has a rationale:

1. The Navy has for many years been a pace setter in the adoption of electronic equipment as aids to navigation, fire control, and other operations. Consistent with this, it seemed appropriate that the course in Leadership, Psychology and Management should avail itself of whatever equipment best suits the purpose of the course through multimedia use.

2. Use of varied media facilitates research into the nature of learning and its dependence on variables that would be much more difficult if not impossible to measure under any other circumstances. The results of this research should prove invaluable in designing future multimedia courses in various curriculum subject areas.

Significance of the project. The plan is unique both in the number of factors investigated and in the use of an entire ongoing course system as an experimental vehicle. This permits empirical findings to be extracted relevant to the influence of each factor, and of factors in combination. It is expected that experiments of this type, as part of a concentrated effort in educational research, may eventually result in a comprehensive understanding of the educational process, so that an instructor may choose with confidence those media and presentation forms most effective for each particular type of student and particular type of task.

Context in Which the Project Operates

Relationship to parent agency. The division for research and development of the parent agency established an office for this project in close proximity to the Academy that constituted the immediate user agency (see Figure 1).

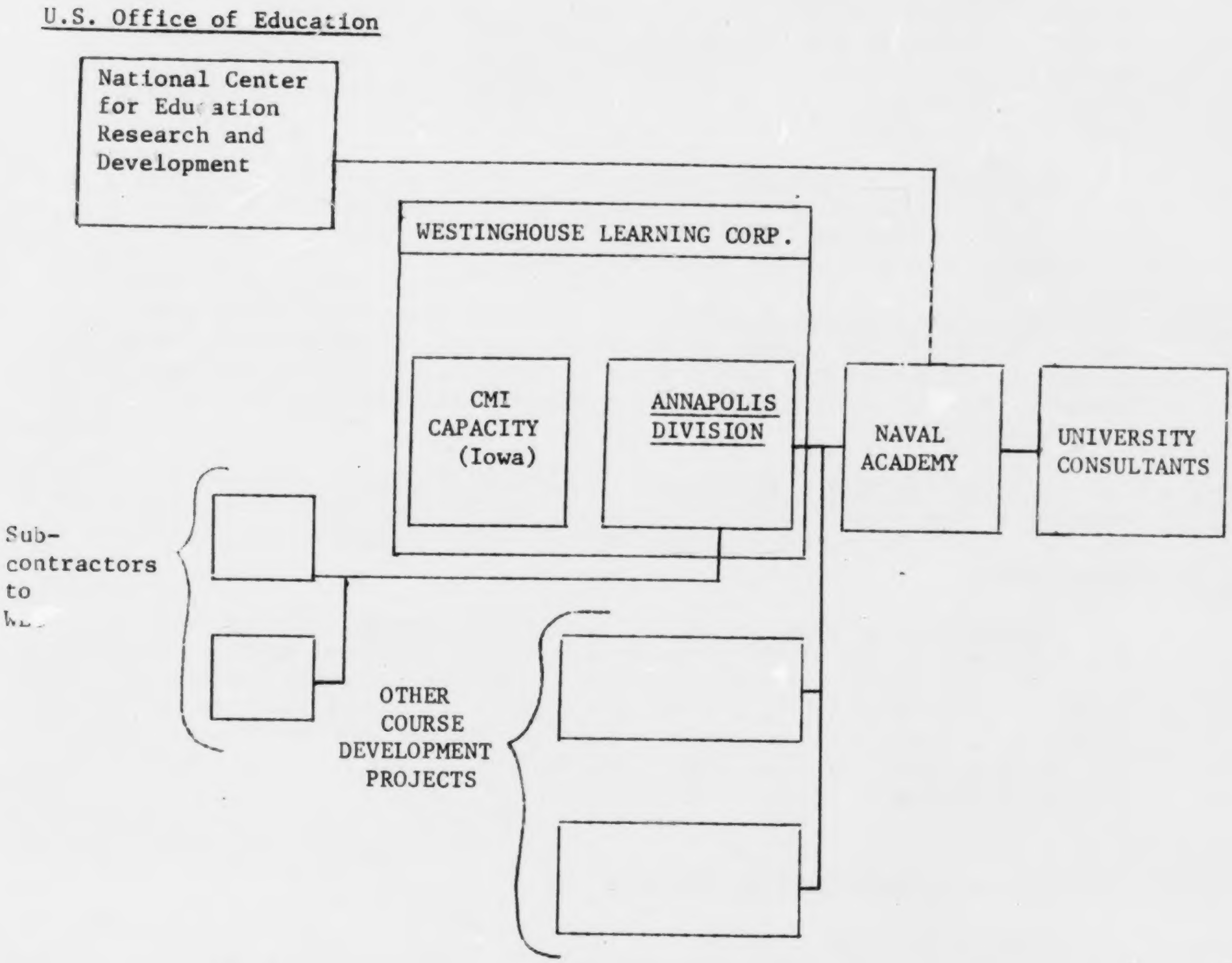
U.S. Office of Education
National Center for Education Research and Development
WESTINGHOUSE LEARNING CORP.
CMI CAPACITY (Iowa)
ANNAPOLIS DIVISION
NAVAL ACADEMY
UNIVERSITY CONSULTANTS
Sub-contractors to WL
OTHER COURSE DEVELOPMENT PROJECTS

FIG. 1. Contextual map.

Relationship to funding sponsor. The essential contract, from the project viewpoint, is with the immediate user agency, the Academy. The project is funded by the U.S. Office of Education (USOE), through the National Center for Education Research and Development (NCERD). Disbursal of funds is subject to approval by the user agency of the course material delivered by the project.

Relationship to immediate user agency. While the project is responsible for producing all the pieces and parts of the multimedia course, every piece and part must meet the approval of the Academy. Such approval is sought at virtually every stage of production.

Relationship to subcontractors. Certain products, both textual and machine dependent, have required extra help beyond the capacity of project personnel. This work has been contracted out. Such contracts are negotiated by the project personnel responsible for the immediate product concerned.

Relationship to advisory group. A university consultant group is retained by the Academy (the user agency), and is responsible for advising the Academy in matters relative to the overall program which contains this project.

Relationship to other efforts of an overall program. The project described here is one of three connected with the same user agency. The other projects were committed to produce courses in different subject areas, covering a range from "hard" to "soft." The agency selected to conduct each project was responsible for the planning and development of its own commitment, with the same close approval of steps by the Academy and/or its advisors.

Supporting and Technological Resources

Provided by parent agency. Apart from the in-office facilities provided at the location opened for the conduct of this project, the principal support is a remote computer facility providing computer-managed (CMI) data handling for the project.

Provided by user agency. The Academy provides instructors, classrooms--in which the classes for which the course is being developed would normally be conducted--and computer-aided instruction (CAI) terminals in individual cubicals. These CAI units are available for this and other courses beyond the immediate group mentioned in this overall program.

Provided by subcontractors. Two types of resource are provided by subcontractors:

1. Additional writers with expertise in specific subject matter areas.

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2. Equipment, such as for making video tapes, movie films, or for duplicating tapes. Printing facilities also fall within this group of resources.

Physical/Environmental Setting

Work location. The project offices in which the production work takes place are located in a modern building across town from the Academy, making each readily accessible to the other without being in continuous contact. This was an arrangement seen as ideal by the project management: neither too close, nor too remote.

Availability of resources. Any resources needed by the project are located in the same city as the Academy, or in other major East Coast cities within easy distance.

Time line. A time line on a project as complex as this would be extremely difficult to display. Figure 2 shows the general sequence that typical elements of the different products must pass through, as well as the associated schedule of technical and milestone reports. However, as this process is ongoing throughout a 12-part course, assignment of specific times would involve too great a complexity of dates.

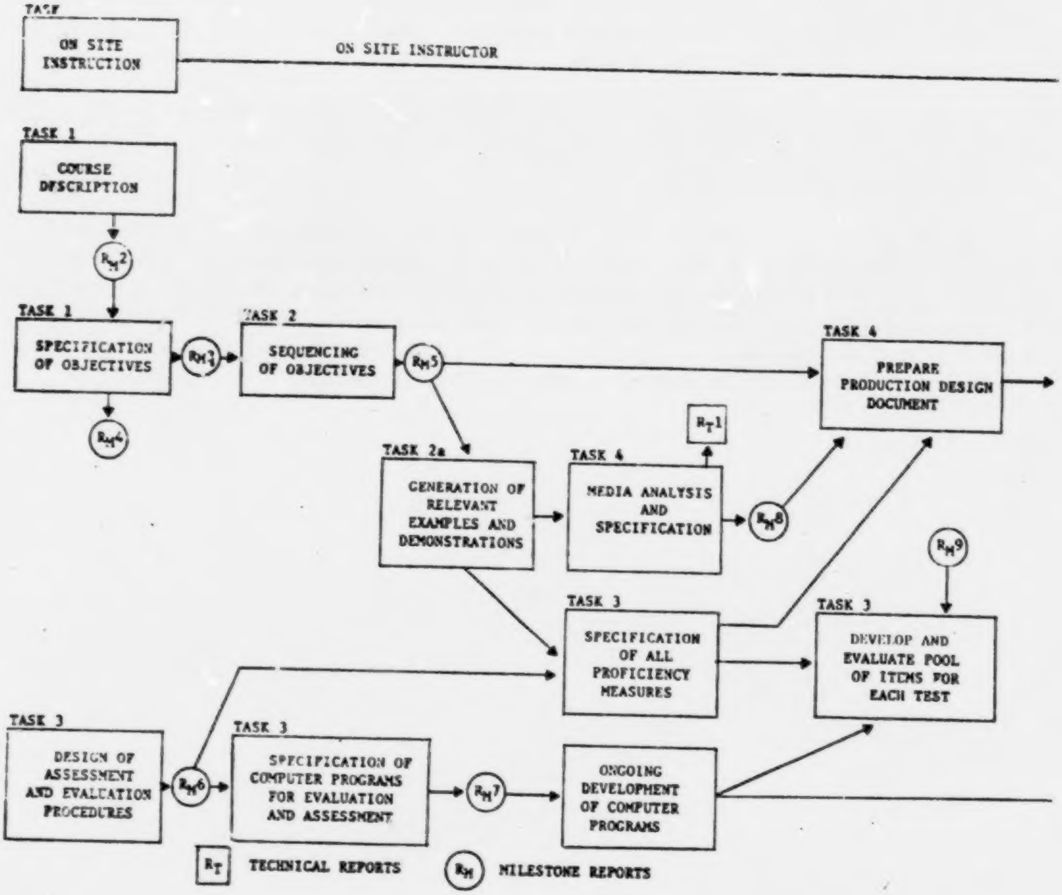

TASK
ON SITE INSTRUCTION
ON SITE INSTRUCTOR
TASK 1
COURSE DESCRIPTION
R_M2
TASK 1
SPECIFICATION OF OBJECTIVES
R_M3
R_M4
TASK 2
SEQUENCING OF OBJECTIVES
R_M5
TASK 4
PREPARE PRODUCTION DESIGN DOCUMENT
R_T1
TASK 2a
GENERATION OF RELEVANT EXAMPLES AND DEMONSTRATIONS
TASK 4
MEDIA ANALYSIS AND SPECIFICATION
R_M8
R_M9
TASK 3
SPECIFICATION OF ALL PROFICIENCY MEASURES
TASK 3
DEVELOP AND EVALUATE POOL OF ITEMS FOR EACH TEST
TASK 3
DESIGN OF ASSESSMENT AND EVALUATION PROCEDURES
R_M6
TASK 3
SPECIFICATION OF COMPUTER PROGRAMS FOR EVALUATION AND ASSESSMENT
R_M7
ONGOING DEVELOPMENT OF COMPUTER PROGRAMS
R_T TECHNICAL REPORTS
R_M MILESTONE REPORTS

FIG. 2. Work flow chart.

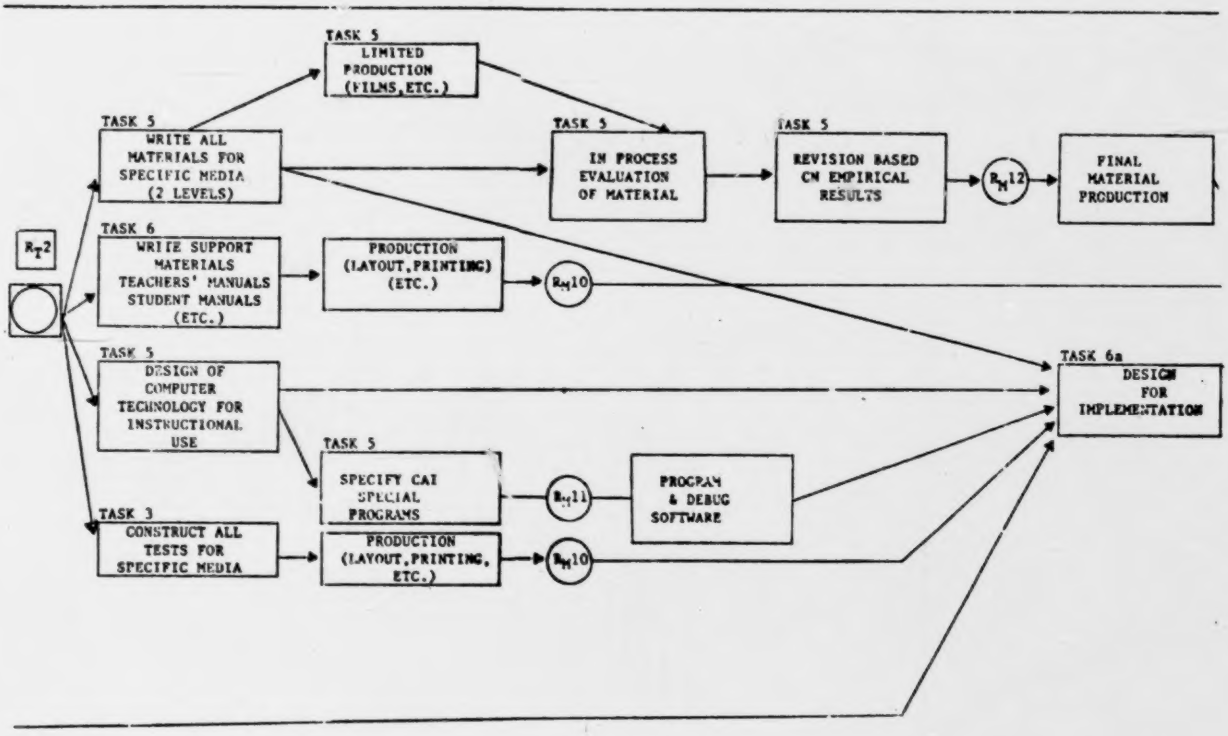

TASK 5
LIMITED PRODUCTION (FILMS, ETC.)
TASK 5
WRITE ALL MATERIALS FOR SPECIFIC MEDIA (2 LEVELS)
TASK 5
IN PROCESS EVALUATION OF MATERIAL
TASK 5
REVISION BASED ON EMPIRICAL RESULTS
R_M12
FINAL MATERIAL PRODUCTION
R_T2
TASK 6
WRITE SUPPORT MATERIALS TEACHERS' MANUALS STUDENT MANUALS (ETC.)
PRODUCTION (LAYOUT, PRINTING) (ETC.)
R_M10
TASK 5
DESIGN OF COMPUTER TECHNOLOGY FOR INSTRUCTIONAL USE
TASK 6a
DESIGN FOR IMPLEMENTATION
TASK 5
SPECIFY CAI SPECIAL PROGRAMS
R_M11
PROGRAM & DEBUG SOFTWARE
TASK 3
CONSTRUCT ALL TESTS FOR SPECIFIC MEDIA
PRODUCTION (LAYOUT, PRINTING, ETC.)
R_M10

FIG. 2. continued.

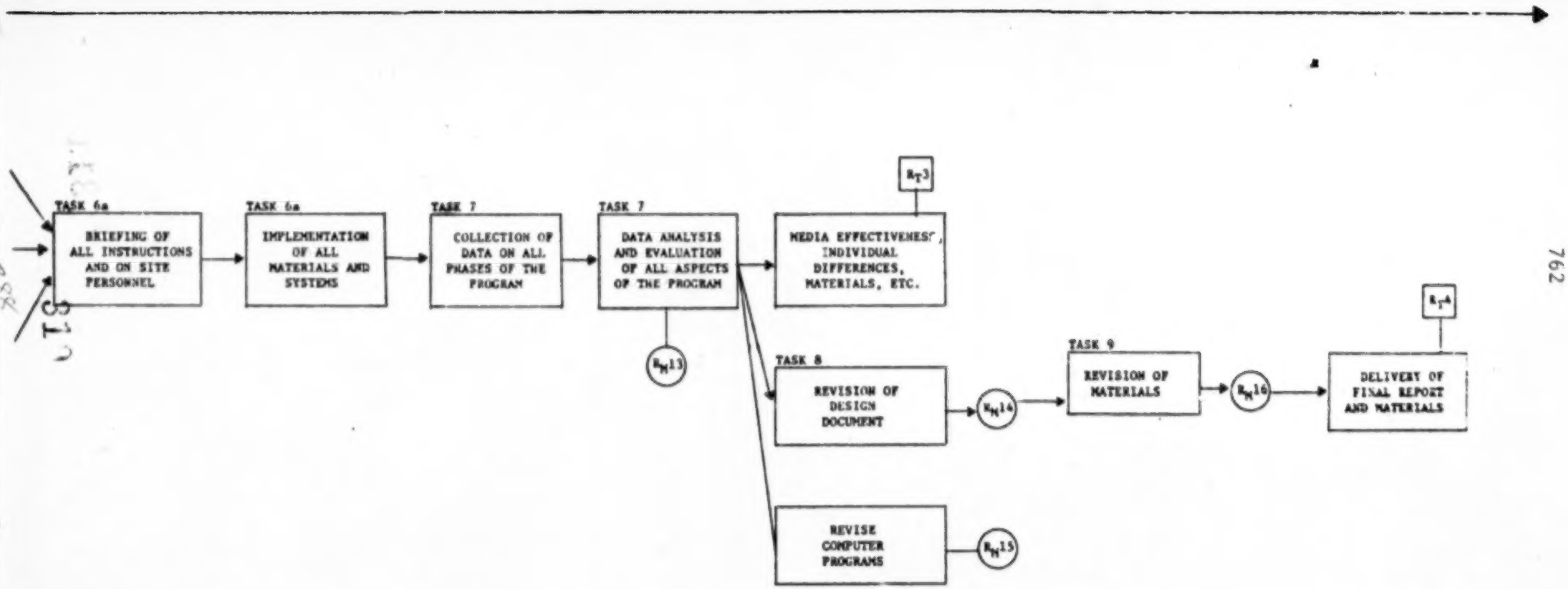

TASK 6a
BRIEFING OF ALL INSTRUCTIONS AND ON SITE PERSONNEL
TASK 6a
IMPLEMENTATION OF ALL MATERIALS AND SYSTEMS
TASK 7
COLLECTION OF DATA ON ALL PHASES OF THE PROGRAM
TASK 7
DATA ANALYSIS AND EVALUATION OF ALL ASPECTS OF THE PROGRAM
R_M13
R_T3
MEDIA EFFECTIVENESS, INDIVIDUAL DIFFERENCES, MATERIALS, ETC.
TASK 8
REVISION OF DESIGN DOCUMENT
R_M14
REVISE COMPUTER PROGRAMS
R_M15
TASK 9
REVISION OF MATERIALS
R_M16
R_T4
DELIVERY OF FINAL REPORT AND MATERIALS

FIG. 2. concluded.

Chapter II: Parameters of the Project

This chapter discusses the functional structure of the Annapolis Project and describes the products being generated.

Project Structure

Staff structure. Figure 3 graphically illustrates the staffing structure of the project. Somewhat unique to this project is the problem of defining its boundaries. Normally the staff would be those people employed on the project within the agency to whom the contract for the project is granted. In this instance, the close working relationship between the project and the user agency in bringing about the products of the project would make strict limitation at such a boundary difficult to justify and somewhat meaningless relative to the real situation.

While there is a very definite and, at times, sharply drawn distinction between the agencies represented to the left and right of the chain-dotted line in Figure 3, product generation involves interaction between them such that the boundary seems to disappear.

The staff member designated "instructor" has worked at the Academy in that capacity for the purpose of becoming fully familiar with course operation, and continues to work there for implementation of the new materials in instructional use.

The two staff members described as "course coordinators" are both employed by the project agency, but one works at the Academy and the other at project headquarters. They are responsible for ensuring that materials are used as intended. This is to validate the research which is based on the experiments incorporated into the current operation of the course.

Project roster. This has been a variable throughout the life of this project, particularly as to working personnel who generate products. At one stage during the life of the project the number of personnel was several times greater than the approximately 20 found to be associated with the project during the observation. For this reason, the roster can only hope to give a representation of staffing.

1. *Division Manager*: The Division Manager is responsible for the company's interests at this location, and concerned with overall supervision of the project. This person was interviewed.
2. *Learning Materials Production and Development Manager*: The Learning Materials Production and Development Manager is responsible for coordinating all activities related to generation of the various classes of learning materials. The person holding this position had resigned shortly prior to the observation period and it appeared questionable whether this position would be filled for the remainder of the project duration.

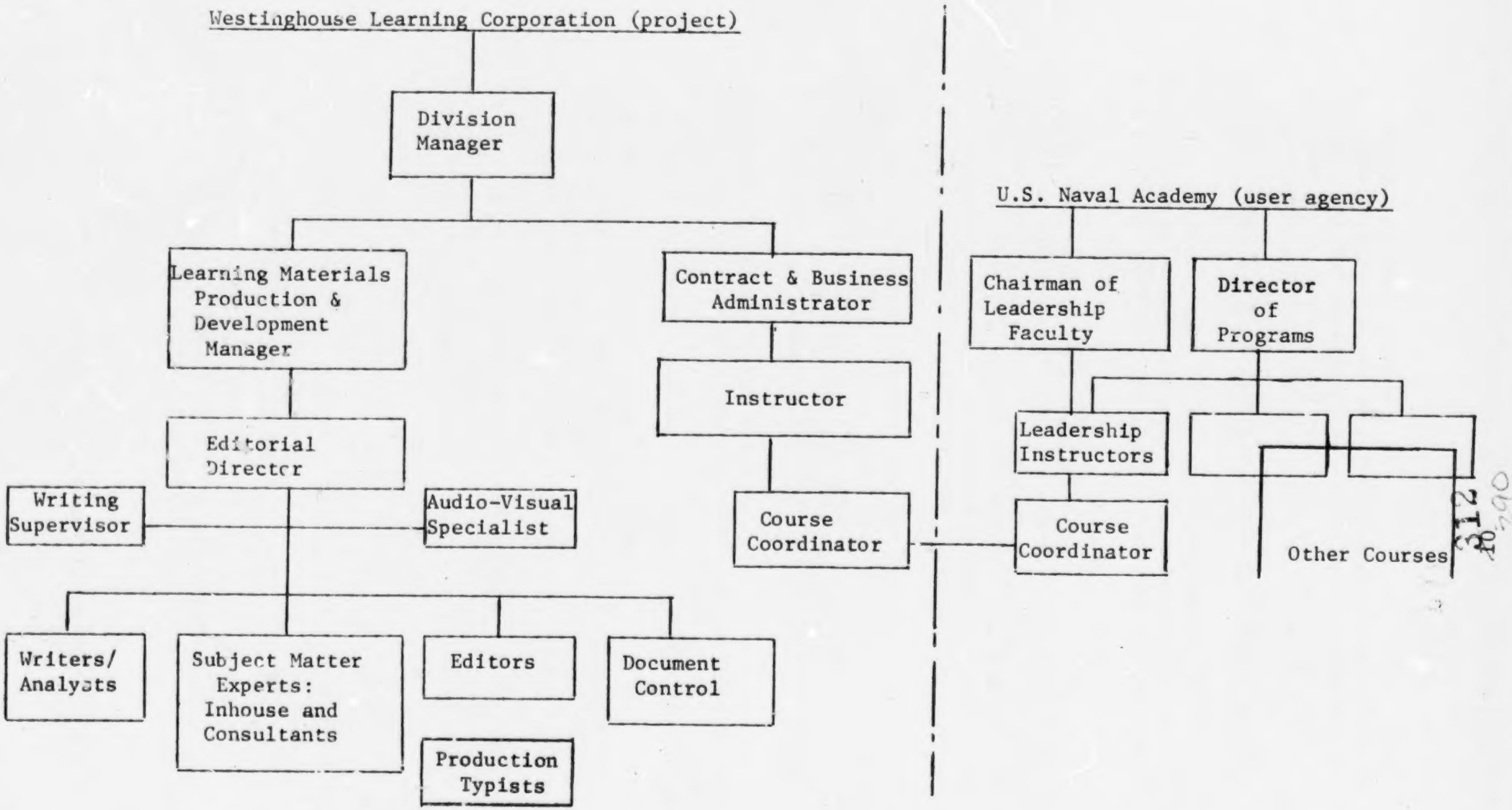

Westinghouse Learning Corporation (project)
Division Manager
Learning Materials Production & Development Manager
Contract & Business Administrator
Editorial Director
Instructor
Writing Supervisor
Audio-Visual Specialist
Course Coordinator
Writers/ Analysts
Subject Matter Experts: Inhouse and Consultants
Editors
Production Typists
Document Control
U.S. Naval Academy (user agency)
Chairman of Leadership Faculty
Director of Programs
Leadership Instructors
Course Coordinator
Other Courses

FIG. 3. Project organizational structure.

3. Editorial Director: The Editorial Director is responsible for editorial content of instructional material in all media. This person was interviewed.

4. Writing Supervisor: The Writing Supervisor is responsible for allocation and coordination of activities under the Editorial Director. This person was interviewed.

5. Audio-Visual Specialist: The Audio-Visual Specialist is responsible for production and quality of all items within this category. This person was interviewed.

6. Writers/Analysts: These people are responsible for producing textual material in its various forms. One was interviewed.

7. Subject Matter Experts: These people work with the writers to assist in generating appropriate material. In general, a writer and subject-matter expert engaged together on the same textual material occupy facing desks. One was interviewed.

8. Editors: The Editors are responsible for making copy ready for production typists.

9. Production Typists: These people produce copy ready for reproduction by photo-offset or other means.

10. Document Control: Document Control has the responsibility of coordinating content and arrangement to conform with requirements of the research experiments.

11. Contract and Business Administrator: The Contract and Business Administrator is responsible for contractual obligations in course production. This person was interviewed.

12. Instructor: The Instructor worked as an Academy instructor preparatory to activity in the project. He now works as instructor for the project and also within project management to provide needed interaction/feedback. This person was interviewed.

13. Course Coordinator(s): Course Coordinators are responsible, at respective locations, for coordinating course design and utilization/implementation. Two were interviewed.

All of those personnel to the left of the chain-dotted line in Figure 3 work within the project, although one of the course coordinators maintains a post at the Academy. The instructor also spends most of his time there. In addition to these people employed by the project, the following personnel identified with the Academy exert an integral influence on the project:

14. Chairman of Leadership Faculty: The Chairman of the Leadership Faculty is responsible for integrity of course content to training needs of the Academy.

15. Director of Programs: The Director of Programs is responsible for coordination of objectives over all the experimental course projects. This person was informally interviewed.

Products Generated

The products generated within this project are subject to investigation over a variety of dimensions by which they may be referenced. Some idea of the sequence by which products get generated may be discerned from the work flow chart presented as a generic time line indication in Figure 2. In terms of the focal products and their development, Figure 4 gives a schematic overview of the interrelationships. Figure 5 will give an example of how individual products are organized within a typical part of the final course.

Index of production responsibilities. The following is an annotated list of the products identified in Figure 4, with arbitrary identification numbers cited for each. Those about which the observation team were able to obtain significant data, by suitable interrogation of people on the project whose tasks involved the generation of these products, are identified by the word "data."

P-01. Acquisition of Original Course Segments from Academy. This was the material analyzed as a starting point for developing new material.

P-02. Terminal Objectives for Course Segments. These were developed and revised for each segment within the course. (data)

P-03. Enabling Objectives for Course Segments. These were built from course content outlines. (data)

P-04. Content Outlines for Course Segments. Involves the determination of content and sequence within each segment. (data)

P-05. Syndactic Text Modules for Course. These are multilevel texts built in printed format around the content map. (data)

P-06. Syndactic Text Modules with Remediation. These are identical to correspondingly numbered item within P-05, except that remediation is provided and they are relevant to the responses made by the student. P-05 does not provide this relevance.

P-07. Single Concept Films. Mostly for use with depth core segments (P-27), these elements form the basis for discussion exercise. (data)

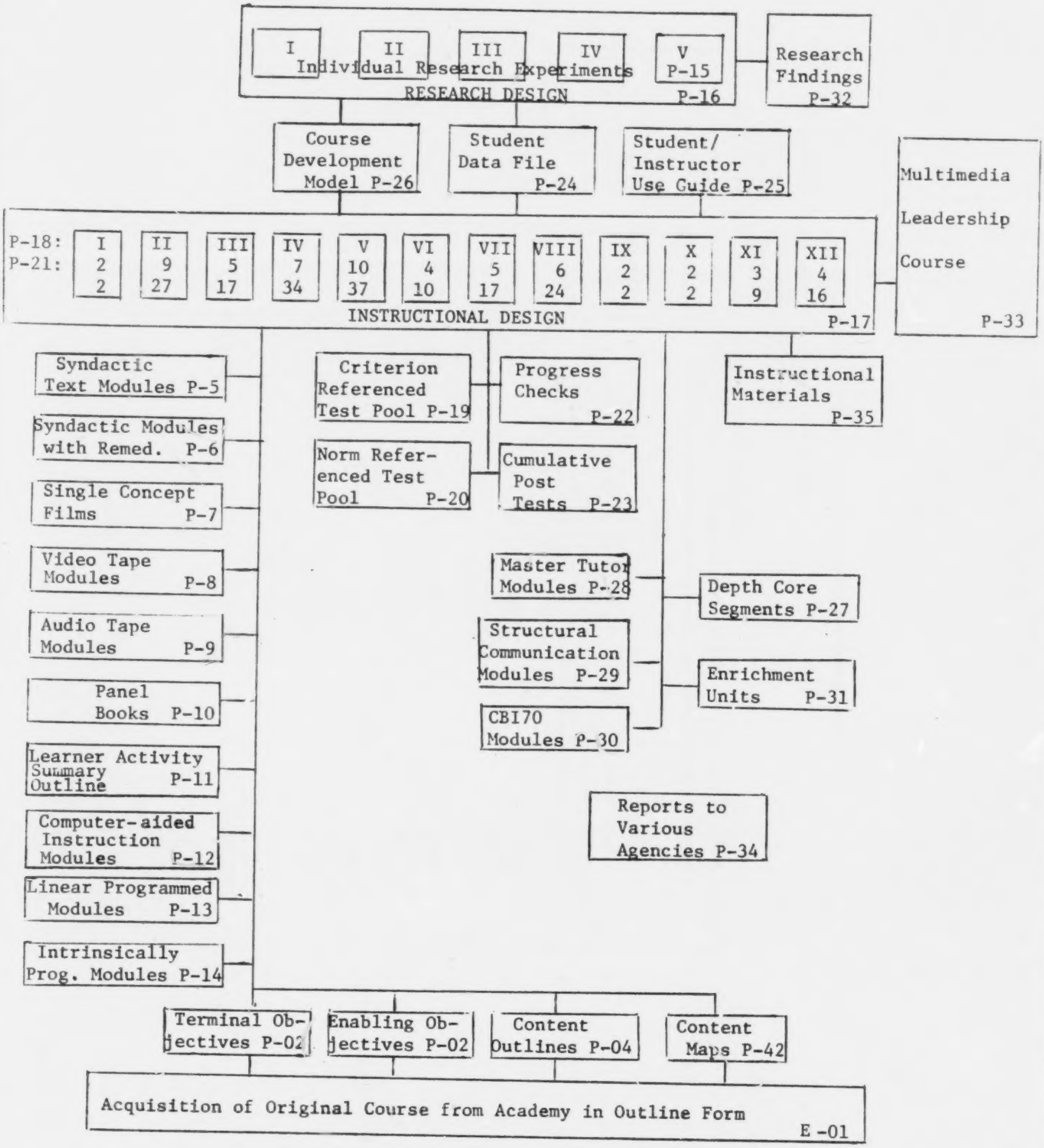
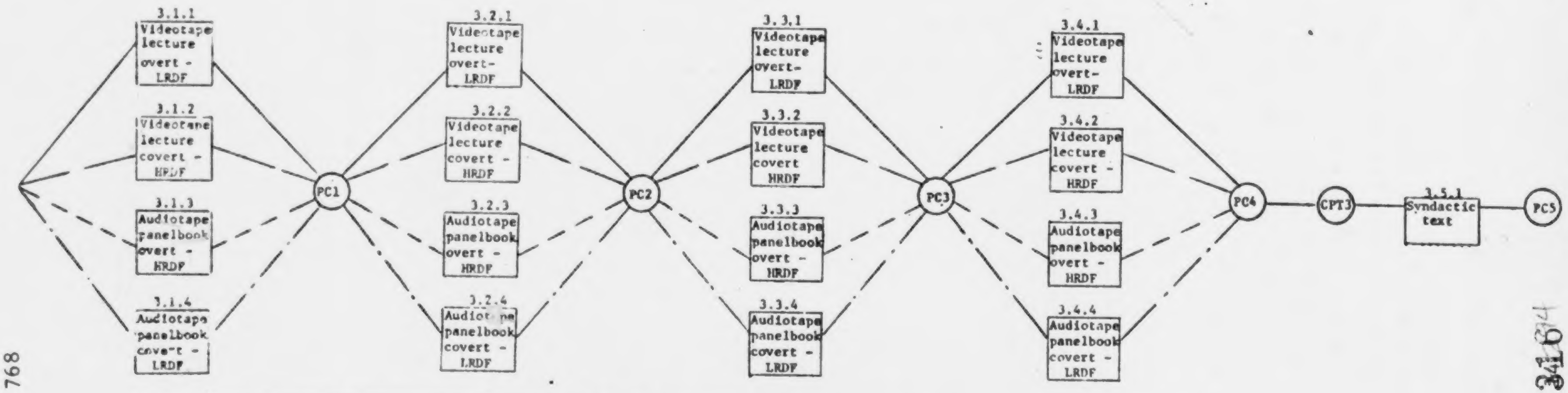

I
II
III
IV
V
Individual Research Experiments
P-15
RESEARCH DESIGN
P-16
Research Findings P-32
Course Development Model P-26
Student Data File P-24
Student/ Instructor Use Guide P-25
Multimedia Leadership Course P-33
P-18:
P-21:
I 2 2
II 9 27
III 5 17
IV 7 34
V 10 37
VI 4 10
VII 5 17
VIII 6 24
IX 2 2
X 2 2
XI 3 9
XII 4 16
INSTRUCTIONAL DESIGN
P-17
Syndactic Text Modules P-5
Syndactic Modules with Remed. P-6
Single Concept Films P-7
Video Tape Modules P-8
Audio Tape Modules P-9
Panel Books P-10
Learner Activity Summary Outline P-11
Computer-aided Instruction Modules P-12
Linear Programmed Modules P-13
Intrinsically Prog. Modules P-14
Criterion Referenced Test Pool P-19
Progress Checks P-22
Norm Referenced Test Pool P-20
Cumulative Post Tests P-23
Instructional Materials P-35
Master Tutor Modules P-28
Depth Core Segments P-27
Structural Communication Modules P-29
Enrichment Units P-31
CBI70 Modules P-30
Reports to Various Agencies P-34
Terminal Objectives P-02
Enabling Objectives P-02
Content Outlines P-04
Content Maps P-42
Acquisition of Original Course from Academy in Outline Form
E-01

FIG. 4. Production responsibilities tree.


3.1.1
Videotape lecture overt - LRDF
3.1.2
Videotape lecture covert - HRDF
3.1.3
Audiotape panelbook overt - HRDF
3.1.4
Audiotape panelbook covert - LRDF
PC1
3.2.1
Videotape lecture overt- LRDF
3.2.2
Videotape lecture covert - HRDF
3.2.3
Audiotape panelbook overt - HRDF
3.2.4
Audiotape panelbook covert - LRDF
PC2
3.3.1
Videotape lecture overt- LRDF
3.3.2
Videotape lecture covert HRDF
3.3.3
Audiotape panelbook overt - HRDF
3.3.4
Audiotape panelbook covert - LRDF
PC3
3.4.1
Videotape lecture overt- LRDF
3.4.2
Videotape lecture covert - HRDF
3.4.3
Audiotape panelbook overt - HRDF
3.4.4
Audiotape panelbook covert - LRDF
PC4
CPT3
3.5.1
Syndactic text
PC5

Segments	Media	Stimulus Encoding	Stimulus Duration	Response Form	Response Demand Frequency	Management Type	Management Frequency
1. Introduction. 2. Classification of groups. 3. Group interactions. 4. Conformity as factor of group.	Videotape lecture and audiotape lecture with panelbook.	Verbal-spoken.	Transient.	Covert-overt selected.	High-low.	None.	Zero.
5. Relation of the individual to the group.	Syndactic-text.	Verbal-written.	Persistent.	Overt-selected.	Variable.	Multilevel.	Variable.

[a] The module identification numbers have the following significance:
First digit: part number
Second digit: segment number within part
Third digit: module number within segment

[b] See Appendix C for the definitions of project abbreviations.

FIG.5. Sample module organization within part: Part three--group dynamics.

P-08. Video Tape Modules. Used for presentation of lectures on video tape, these are in identical format with other modules of same segment for the core. (data)

P-09. Audio Tape Modules. These are used for presentation of lectures on audio tape, in which the visual data (charts, pictures, etc.) presented on video are provided by panel books (P-10). (data)

P-10. Panel Books. These are books containing the visuals necessary to accompany lectures presented by audio tape.

P-11. Learner Activity Summary Outline. A bibliographic session at the conclusion of a part of the course.

P-12. Computer-aided Instruction (CAI) Modules. These are computer-programmed instructional modules to correspond with those using other media for the same segments. (data)

P-13. Linear Programmed Modules. These are course content segments presented in linear programming mode. (data)

P-14. Intrinsically Programmed Modules. These texts are designed on intrinsically programming principles. (data)

P-15. Research Design Experiments. These were five experiments designed to obtain simultaneous data on selected variables.

P-16. Overall Research Design. A design and evaluation plan with the objective of providing information that will enable better utilization of respective media. (data)

P-17. Instructional Presentation Design. An arrangement for presenting the units of the course to optimize research and instruction value. (data)

P-18. Major Parts of Core. These are 12 groups of segments on the major subject elements of the course.

P-19. Criterion Referenced Test Pool. This includes approximately 1500 test items.

P-20. Norm Referenced Test Pool. This includes approximately 600 test items.

P-21. Segments of Core. One or more (as many as six) modules (197 total) carrying identical content in different presentations for testing various parameters of presentation.

P-22. Progress Checks. These are applied to the student after each module (or segment) with a view to determining his readiness for proceeding to the next segment (module). (data)

P-23. Cumulative Post Tests. These tests are applied at the beginning of the course and after each part (13 in all) to assess student's learning at each major break in subject matter.

P-24. **Student Data File.** This provides a means of monitoring individual student progress and data each student provides as research input. (data)

P-25. Student/Instructor Use Guide. A manual for use by students and instructors respectively as a guide for use of instructional material. (data)

P-26. Course Development Model. The model for development based on original input with planned improvements and needs for instruction and research purposes. (data)

P-27. Depth Core Segments. These are various segments provided to deepen the impression and help the student apply the basic information learned in the core segments.

P-28. Master Tutor Modules. Multitrack (4-track, in this instance) audio tape programmed to duplicate intrinsic programmed units on tape. (data)

P-29. Structural Communication Modules. Another form of depth and/or enrichment unit, utilizing situation problem with matrixed response choice, linked to programmed instruction that enables the student to pursue his own course until he completely covers the available information within the unit. (data)

P-30. CBI-70 Modules. An intrinsic programmed system, utilizing 6-track sound film, presented on a CBI70 (Computer-based Instruction) machine. (data)

P-31. Enrichment Units. These units utilize one of the types of modules in Products 28-30 to provide enrichment.

P-32. Research Findings. The compiled results from the data collected in research.

P-33. Multimedia Leadership Course. The ultimate text and lesson plans, etc. for continued use, after the experiment is completed, at the Academy.

P-34. Reports for Various Agencies. These are technical and milestone reports (see Figure 2), including the terminal report.

P-42. Content Map. This is an integral part, as well as an organization tool, in producing each part of the course, showing the sequence and/or ordering of the segments within that part. (data)

Production responsibilities tree. The products within the production responsibilities tree (Figure 4) are shown in clusters, providing visual evidence that numbers of modules go to make up segments, and segments make up parts. Figure 5 shows a typical part organization, from project documents, to illustrate how the modules enable different students to be routed through different forms for research purposes. If this profile were reporting on the research of this project, each specific experiment would be described, together with the variables it addresses and how it addresses them. That is part of the purpose of the project being described in this profile.

The form here is illustrative, showing the manner in which such an experiment can be organized. Each part is organized differently, for each purpose, so the precise arrangement shown in Figure 5 (shown earlier) is only illustrative.

Management Responsibilities

The responsibilities identified in this section are those that emerged from interviewing personnel on the project with management responsibilities and from management activities in which those primarily occupied with generating products may also engage. As only some of the project staff were interviewed, the index listed here cannot claim to be complete.

Production management.

PM-35. Instructional Materials. This involves the management of production and delivery of the materials generated by the project. (data)

PM-37. Contract (Proposal). This involves monitoring the product development against the proposal specifications. (data)

PM-40. Product Quality. This involves responsibility for all aspects of the product quality generated. (data)

Environmental management.

EM-36. Budget. This involves reviewing performance against projected costs, in form and figures. (data)

EM-38. Staff Morale. This involves keeping everybody happy (if that is their best state) and willing to work. (data)

EM-39. Interagency Cooperation This involves seeing that the atmosphere between agencies involved is as good as possible for productivity. (data)

EM-41. Staff Hiring. Staffing the project with people who will work efficiently. (data)

EM-43. Intraagency Cooperation. This involves keeping those within the project in the same state aimed at in EM-38. (data)

EM-44. Project Accountability. This involves seeing that the project meets its commitments. (data)

Management responsibilities network. Figure 6 shows a management responsibilities network linking together those responsibilities identified in the preceding index.

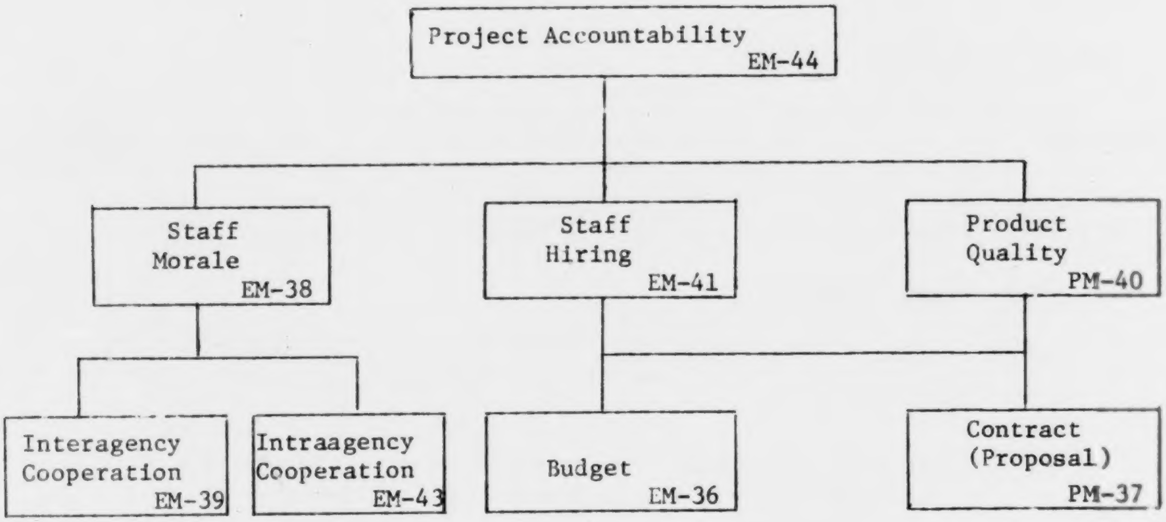

Project Accountability
EM-44
Staff Morale
EM-38
Staff Hiring
EM-41
Product Quality
PM-40
Interagency Cooperation
EM-39
Intraagency Cooperation
EM-43
Budget
EM-36
Contract (Proposal)
PM-37

FIG. 6. Management responsibilities network.

Chapter III: Summary of the Data

Data were gathered around the selected outputs by means of interviews with knowledgeable staff. The interviews sought to elicit for each output the standards by which the satisfactory completion of the output is judged, the tasks required to generate an output meeting those standards, and the enablers (knowledge, skills, and sensitivities) which facilitate the carrying out of those tasks. Interviewee statements were categorized subsequently into somewhat more general statements, for purpose of providing more standardization of reported information. Tables 1-6 summarize the data in these categories by showing how frequently an item of interview information was cited within one of these categories.

Within each category are a series of descriptive labels which are representative of interviewee statements. These descriptive labels are listed in the tables under the category heading. In the process of reducing raw (interview) data, narrative interviewee statements about an output were linked to one of the category sets. Each narrative statement was then classified by means of a number code according to the most representative descriptive label within a given category or subcategory.

Each table, therefore, provides the frequency with which interviewees cited specific statements (which are represented by the descriptive labels in the tables) of standards, tasks and enablers in relation to each output.[1]

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[1] If the reader is interested in the narrative statements of the interviewee, these can be found in the Appendix. To locate the narrative statement for any given category, first note the output and its identification number in the table. Second, note that each descriptive label within a given category has a distinct number or code. Turn to the Appendix and locate the output. Under the output locate the category label or heading (standard, task, or enabler) and pinpoint the number or numbers (depending on the frequency cited) of the descriptive label which appeared in the table. The statement in the Appendix opposite this number is the original narrative statement from an interviewee and is only represented in the tables by its descriptive category label and code number.

TABLE 1

Output Standards Cited for Each Output Analyzed

Project Outputs No.	Label	Primary Categories of Standards for Outputs (category code number and label for coding set J-1) 01 Completeness of content	04 Communication & clarity	05 Utility or value	06 Acceptance by users	07 Personal satisfaction/feeling	08 Agreement concurrence w/others	09 Lack of errors/discrepencies	11 Appropriate design/content	12 Goal attainment	13 Acceptance by others (in proj.)	14 Acceptancy by sponsor	15 Compliance w/sponsor guidelines	16 Compares favorably	17 Internal consistency	18 Satisfactory appearance	19 Logical criteria	20 Performs consistantly	21 Sources of variance controlled	22 Functions as planned	23 Successfully constrains/guides	24 Terminology appropriate	Output Totals
P-02	Terminal Objectives		1					1				1					1						4
P-03	Enabling Objectives											1											1
P-04	Content Outlines		2	2		2		3				1			1		1						12
P-05	Syndactic Texts	3	2		1	2	1			1	4	1	1									1	17
P-07	Single Concept Films				1					1		1		1									4
P-08	Video Tapes		1		2	1		3		1		1		1		1	1					1	13
P-09	Audio Tapes				1					1		1		1									4
P-12	CAI Modules			1						1								1					3
P-13	Linear Programming		1							1						1							3
P-14	Intrinsically Programmed	1				1		3		2				1						2			10
P-16	Overall Research Design			1			1	1						1					1	1	2		8
P-17	Instructional Presn.			1	1		1																3
P-22	Progress Checks	1	1														1						3
P-24	Student Data File				1			1			1			1						1			5
P-25	Use Guides										1										1		2
P-26	Course Development Model					1			1					1	1								4
P-28	Master Tutor				1					1		1		1									4
P-29	Structural Communication	1		1				1							1		1						7
PM-35	Instructional Materials	1				2					1	1											5
EM-36	Budget										1			2									3
PM-40	Product Quality				1					1													2
P-42	Content Map	1									1					1							3
EM-43	Intraagency Cooperation																			1			1
EM-44	Project Accountability																			1			1
Category Totals		8	10	6	9	9	3	13	1	10	9	9	1	10	3	3	5	1	1	6	3	2	122

TABLE 2

Process Standards Cited for Each Output Analyzed

Project Outputs No.	Label	04 Deadlines are met	05 Acceptable level of output	07 An expected activity occurs	08 Staff contributions accepted	11 Costs consistent w/estimates	13 Work conducted w/in budget	14 No felt deficiencies	20 Performance respected	23 Project view accepted	25 Staff reflect trust	26 Values and objectives match	27 Decisions result in action	28 Closure reached on questions	Output Totals
P-04	Content Outlines	1		1										1	3
P-17	Instructional Presn.	1													1
P-26	Course Development Model									1					1
PM-35	Instructional Materials	1													1
EM-36	Budget					1									1
P-42	Content Map							1	3						4
EM-43	Intraagency Cooperation	1	1		1		1				2	1	1		8
EM-44	Project Accountability	1					1								2
Category Totals		5	1	1	1	1	2	1	3	1	2	1	1	1	21

Primary Categories of Standards for Processes (category code no. and label for coding set J-2)

TABLE 3

Tasks Cited for Each Output Analysed

Project Outputs		Clusters of Tasks (cluster code no. and label for coding set MO)																	Output Totals
No.	Label	01 Clarifying problem addressed	02 Formulating objectives	03 Designing the output	04 Producing the output	05 Collecting/processing data	06 Assessing the output quality	07 Diffusing the output	21 Procuring professional staff	22 Effecting accountability	23 Procuring systems/services	24 Estab./Effecting quality control	25 Maintaining job satisfaction	26 Facilitating growth of staff	29 Facilitating relationships	30 Effecting info. flow patterns	31 Diffusing info. within project	23 Effecting decision mechanisms	
P-02	Terminal Objectives	1	2		1		2												6
P-03	Enabling Objectives				1												1		2
P-04	Content Outlines		1	3	2		14	2		4		7			1	1			35
P-05	Syndactic Texts	4	1	5	15	2	13			1		2		1	1		2		47
P-07	Single Concept Films			2	3		1			1	2	2							11
P-08	Video Tapes	1		3	9		11				7								31
P-09	Audio Tapes				4														4
P-12	CAI Modules				1		1												2
P-13	Linear Programmed	1		3	2		5			1					2		1		15
P-14	Instrinsically Prog.			1	1	1	4		1	1		2							11
P-16	Overall Research Design	5	2	12	1	7	11			2					7		2		49
P-17	Instructional Presentation		1	1	6	3	2	1		2					3		1		20
P-22	Progress Checks				1		2												3
P-24	Student Data File	1		1	4	8				1					1	1	1		18
P-25	Use Guides	2		1	5														8
P-26	Course Development Model	1	2	1	3		1	3		1		1				1	6		20
P-28	Master Tutor				3						1								4
P-29	Structural Comm.	1		4	3	3	4												15
P-30	CBI70				3														3
PM-35	Instructional Materials									2		2							4
PM-36	Budget	1								4		1							6
PM-37	Contract (proposal)		1	1						3									5
EM-38	Staff Morale											1	2		1				4
EM-39	Interagency Cooperation					1									3	3	1		8
PM-40	Product Quality						3			1		8					1		13
EM-41	Staff Hiring								3										3
P-42	Content Map			1	2													2	5
EM-43	Intraagency Cooperation												2		5		2		9
EM-44	Project Accountability								2	4	1					1			8
Cluster Totals		18	10	39	70	25	74	6	6	28	11	26	4	1	24	7	18	2	369

TABLE 4

Enabling Knowledges Cited for Each Output Analyzed

Project Outputs No. Label	01 Standard school subjects	02 Subjects learned in courses	03 Subjects related to RDD&E	04 Technical/professional topics	05 Project focus topics: external	06 Project variables: external	07 Project operation: general	08 Project operation: specific	10 Staff status/responsibility	11 Fiscal matters	12 Resources: personnel	16 Guidelines for reporting	17 Writing styles	19 Technical terminology/language	22 Use of equipment/systems	23 Chars. of target audience	Output Totals
	Primary Categories of Enabling Knowledge (category code no. and label for coding set S - 1)																
P-02 Terminal Objectives			1					2									3
P-03 Enabling Objectives			1					1									2
P-04 Content Outlines				1	4		1	2								1	9
P-05 Syndactic Texts		1	1	1		1	1	5			1		2	2			15
P-07 Single Concept Films				1									1		1		3
P-08 Video Tapes				2	1								1	1	2		7
P-09 Audio Tapes				1									1		1		3
P-12 CAI Modules		1															1
P-14 Intrinsically Prog.		1		1													2
P-16 Overall Research Design			4	1													5
P-17 Instructional Presn.							2										2
P-22 Progress Checks								1									1
P-24 Student Data File			1				2										3
P-25 Use Guides							3										3
P-26 Course Development Model							1	1									2
P-28 Master Tutor				1									1		1		3
P-29 Structural Comm.								1						1			2
FM-35 Instructional Materials			1		1		2	3									7
EM-36 Budget	1			1						3	1	1		1			8
EM-39 Interagency Cooperation									1								1
FM-40 Product Quality							1										1
EM-41 Staff Hiring											3						3
P-42 Content Map			1				1										2
Category Totals	1	3	10	10	6	1	14	16	1	3	5	1	6	5	5	1	88

TABLE 5

Enabling Skills Cited for Each Output Analyzed

Project Outputs		Primary Categories of Enabling Skills (category code no. and label for coding set S - 2)																													Output Totals
No.	Label	01 Teaching	02 Facilitating people interaction	03 Translating content to media	04 Using/applying feedback	05 Programming project events	06 Programming subject matter	08 Analytical reading/study	09 Analytical problem solving	10 Analytical data handling	11 Disciplining self	12 Disciplining others	13 Listening	14 Writing	15 Presenting orally	16 Using media	17 Interpreting language	18 Finding fits/integrating	19 Planning/conceptualizing	20 Exercising judgment	21 Tracking activities/goals	22 Estimating expenses/resources	23 Persuading/justifying	26 Locating/maintaining info.	27 Using equipment/systems	29 Getting others to perform	30 Adapting to situation/demands	32 Identifying/correcting errors	33 Graphically illustrating	34 Coordinating activities	35 Communicating clearly	
P-02	Terminal Objectives		2				1	1						1				1														6
P-03	Enabling Objectives		2				1							1																		4
P-04	Content Outlines		1			1	1				2			1				2										1				9
P-05	Syndactic Texts	1					2		1	1	1			3					1					1	1				1			13
P-07	Single Concept Films													2	1	1		1		1												6
P-08	Video Tapes			1		1								1	1	1		1		1												7
P-09	Audio Tapes													1	1	1		1		1												5
P-1	Linear Programming		1		1		1																1									4
P-14	Instrinsically Programmed	1					2	1						1																		5
P-16	Overall Research Design		2																													2
P-17	Instructional Presn.					2							1								1		1						1			8
P-24	Student Data File									1	1																					2
P-25	Use Guides													1				1														2
P-26	Course Development Model	1	3								2																1					7
P-28	Master Tutor													1	1	1		1														5
P-29	Structural Comm.							1										1														2
PM-35	Instructional Materials					1													1							1				1	1	5
EM-36	Budget				1								1									1		1	1							5
EM-38	Staff Morale																						1									1
EM-39	Interagency Cooperation											1																				1
P-42	Content Map					1								1																		2
Category Totals		3	11	1	2	6	8	3	1	2	6	1	2	14	4	4	2	9	2	4	1	1	3	2	2	1	1	1	2	1	1	101

TABLE 6
Enabling Sensitivities Cited for Each Output Analyzed

Project Outputs		Primary Categories of Enabling Sensitivities (category code no. and label for coding set S-3)																					
No.	Label	01 Values of self and others	02 Capabilities and limitations	03 Needs of self and others	05 Context of subject matter	10 Awareness of structure	11 Awareness of method	12 Role of catalyst/synthesizer	13 Language barriers	14 Reality in goal setting	15 Degrees of freedom to deviate	16 Existing value systems	17 Personality of others	18 Potential conflict of interest	19 Supportiveness required	20 Unstated obligations	21 Limitations of analyses/data	22 Responses of target audience	27 Acceptability of output	28 Admitting error/adapting	30 Response sets of target audience	31 Nature/scope of output	Output Totals
P-02	Terminal Objectives					1																	1
P-03	Enabling Objectives					1																	1
P-04	Content Outlines		2		1								1								2	2	8
P-05	Syndactic Texts												1			1			1				3
P-07	Single Concept Films								1										1				2
P-08	Video Tapes								1														1
P-09	Audio Tapes								1														1
P-14	Intrinsically Prog.																				1		1
P-16	Overall Research Design			2		1	1	1		1		2		1			1			1			11
P-17	Instructional Presn.																	1					1
P-25	Use Guides			2																			2
P-26	Course Development Model											2											2
P-28	Master Tutor								1														1
PM-35	Instructional Materials	1																					1
PM-37	Contract (Proposal)			2																			2
EM-38	Staff Morale														1								1
EM-39	Interagency Cooperation		1						2			2		1									6
PM-40	Product Quality	1	1						1	1	2	2		1									9
P-42	Content Map			1																			1
	Category Totals	2	4	7	1	3	1	1	7	2	2	8	2	3	1	1	1	1	2	1	3	2	55

Chapter IV: Supplementary Data

This chapter contains information about staff background, the resources and equipment used in carrying out the tasks of the project, and the classifications of output characteristics.

Summary of Staff Background

Of the eight personnel who completed the Job/Task Inventory forms as part of their interview sessions, one had a doctorate degree, three had master's degrees, and four had bachelor's degrees. Their specialties were all different, and were as follows:

Education: Teaching and research
Education: Teaching and guidance
Personnel administration
German language
Engineering
Economics
Business administration
Broadcasting and public administration

The experience represented in these personnel aggregate 16 years teaching in college or university settings, five years conducting research in similar settings, one year teaching in public school, five years working for state or national educational agencies, 11 years working in educational R & D centers, 12 years working in the present organization (from 1 to 4.5 years each), and eight years in other educational or research employment.

In response to questions on training that personnel had, or thought necessary for the work, each named training specific to the job (see project roster in Chapter III), plus emphasis on the part of several writers on experience in military training background.

Support Resources

Those support resources used by the personnel interviewed and seen as necessary included: equipment construction (mechanical, electronic, carpentry, etc.); printing; slide, film, and tape reproduction services; photography; artwork and illustrations; drafting; technical writing; editing; secretarial service, other than typing; typing; purchase of supplies and equipment; library holdings; subscriptions to technical and professional journals/periodicals; requests for documents or publications not locally available; computer analysis services (data processing); computer program writing; statistical consultation; audio-visual aids and devices; subjects for experimentation or try-out of procedures; travel arrangements; budgetary and other fiscal accounting; scoring of test items; television facilities and equipment.

Support Equipment

Listed as available to individual personnel were: dictation equipment, desk calculators; photographic equipment; video tape; television camera; readers for microfiche or microfilm; and audio tape recorder.

Classifications of Output Characteristics

As the Oregon Studies evolved it became evident that outputs could be categorized in terms of a number of variables. Among them are (a) Structure (product, event, or condition), (b) Function (policy setting, management or production), (c) Level (focal, component, or facilitating), (d) Character (knowledge, technology, implementation, or information), and (e) Stage of Completion. These five schema are represented in Table 7 for each project output identified, with frequencies summarized for each category. Table 7 has been added to this profile subsequent to the profile's original writing.

TABLE 7

Classifications of Output Characteristics

Project Outputs		Output Characteristic[a]																		
		Structure			Function			Level			Character (Products only)				Completion Stage					
No.	Label	p	e	c	ps	m	p	f_1	c	f_2	k	t	i_1	i_2	1	2	3	4	5	6
P-01	Acquisition of Original Course Segments from Academy		X			X				X					X					
*P-02	Terminal Objectives for Course Segments	X					X		X			X			X					
*P-03	Enabling Objectives for Course Segments	X					X		X			X			X					
*P-04	Content Outlines for Course Segments	X				X				X		X			X					
*P-05	Syndactic Text Modules for Course	X					X		X			X						X		
P-06	Syndactic Text Modules with Remediation	X					X		X			X						X		
*P-07	Single Concept Films	X					X		X			X					X			
*P-08	Video Tape Modules	X					X		X			X				X				
*P-09	Audio Tape Modules	X					X		X			X						X		
P-10	Panel Books	X					X		X			X						X		
P-11	Learner Activity Summary Outline	X					X		X			X					X			
*P-12	Computer-aided Instruction Modules	X					X		X			X				X				
*P-13	Linear Programmed Modules	X					X		X			X						X		
*P-14	Intrinsically Programmed Modules	X					X		X			X						X		
P-15	Research Design Experiments		X				X			X								X		
*P-16	Overall Research Design	X				X				X		X				X				
*P-17	Instructional Presentation Design	X				X				X		X				X				
P-18	Major Parts of Core	X					X		X			X						X		
P-19	Criterion Referenced Test Pool	X				X				X				X	X					
P-20	Norm Referenced Test Pool	X				X				X				X	X					
P-21	Segments of Core	X					X		X			X						X		
*P-22	Progress Checks	X					X		X			X						X		
P-23	Cumulative Posttests	X					X		X			X				X				
*P-24	Student Data File	X				X				X				X						X
*P-25	Student/Instructor Use Guide	X					X		X			X				X				
*P-26	Course Development Model	X				X				X		X			X					

TABLE 7 concluded

Classifications of Output Characteristics

Project Outputs		Output Characteristic[a]																		
		Structure			Function			Level			Character (Products only)				Completion Stage					
No.	Label	p	e	c	ps	m	p	f_1	c	f_2	k	t	i_1	i_2	1	2	3	4	5	6
P-27	Depth Core Segments	X					X		X			X						X		
*P-28	Master Tutor Modules	X					X		X			X						X		
*P-29	Structural Communication Modules	X					X		X			X						X		
*P-30	CBI - 70 Modules	X					X		X			X							X	
P-31	Enrichment Units	X					X		X			X						X		
P-32	Research Findings	X					X	X			X							X		
P-33	Multimedia Leadership Course	X					X	X				X						X		
P-34	Reports for Various Agencies	X				X				X			X							X
PM-35	Instructional Materials	X					X	X				X						X		
EM-36	Budget	X				X				X		X			X					
PM-37	Contract (Proposal)	X				X				X		X			X					
EM-38	Staff Morale			X		X				X										X
EM-39	Interagency Cooperation			X		X				X										X
PM-40	Product Quality			X		X				X										X
EM-41	Staff Hiring		X			X				X					X					
*P-42	Content Map	X					X		X			X			X					
EM-43	Intra-agency Cooperation			X		X				X										X
EM-44	Project Accountability			X		X				X										X
Classification Frequencies[b]		36	3	5	0	17	27	3	23	18	1	31	1	3	7	10	2	17	1	7

[a] The specific output characteristics are identified as follows:

Structure

p - product
e - event
c - condition

Function

ps - policy setting
m - management
p - production

Level

f_1 - focal
c - component
f_2 - facilitating

Character

k - knowledge
t - technology
i_1 - implementation
i_2 - information

Completion Stage

1 - completed over one year ago
2 - completed 3 to 12 months ago
3 - completed within last 3 mos.
4 - currently in progress
5 - not yet underway
6 - on going (continuous)

[b] Data totals in this table may vary slightly from data in tables reported elsewhere. This is a function of decision rules governing classification of outputs having been revised and applied to these data subsequent to the preparation of the profile.

Chapter V: Project Dynamics

On Primary Focus

The somewhat unusual feature about this project is its dual foci: i.e., research and development. In some senses, virtually everything done within the project is influenced by both foci: the material produced must be good for both purposes, the course being developed for the Academy, and the research being for the benefit of the agency conducting the project and the funding sponsor.

As tends to happen in such a situation, because different personnel are assigned to responsibilities connected with one focus or the other, individuals are inclined to favor one or the other viewpoint where differences arise.

It would seem that, what is good for one is good for the other if good research results in a contribution to knowledge about learning that in turn results in the development of a better course. This concept postulates a relationship that has been presented often for the world of R and D. It does not always seem to work out that way in the real world. Things that happen within this project well illustrate this departure.

One "ideal" for a project such as this would be to start with course material as it presently exists, make definitive changes, predominantly related to the utilization of various media (since this is to be a multi-media course) then measure the effect of such changes according to reliable research principles. This should in turn result in decisions regarding the best format, content, media presentation, etc. at each point along the curriculum in the course. Theoretically the course will progressively improve if this process is followed.

This is not always what actually happens. To get a better picture of what work in such a situation is like, we need to examine the causes for departure from the foregoing "ideal."

Nature of the Research

While a profile such as this cannot describe the research design in detail, an understanding of the nature and postulates of the research is valuable to understand how conflict with course development can generate.

The research cited here is concerned with the proposition that media have individual characteristics of their own that can influence learning and that the learning which results from media characteristics is independent of the learning of "content" which results from media use. Thus, from the research viewpoint, the course design is not intended to optimize content in each medium so as to best utilize that medium relative to the specific subject matter, but rather to determine possible comparative limitations associated with different media for making identical content presentations.

Most of the units (modules) connected with the research employ content designated as verbal and visual--a composite of the two. Pictorial presentations are made, and words are presented before, after, or with the presentations. By regarding the total presentation in a specific medium as a "system," the research postulates capability variables after Tosti and Ball,[2] which are set forth in the matrix and dimensions shown in Table 8.

Three capabilities are distinguished: stimulus, response, and management. Each may vary in form and in frequency or timing.

Stimulus refers to the means by which communication of content reaches the student. This can be verbal-written, usually a printed page; verbal-spoken, such as a teacher talking; and pictorial, such as something drawn on the chalk board, projected by an overhead projector, or presented as art work in the textbook. Briefly, this divides stimulus into words and pictures, with the word presentation being subdivided according to whether the words are visually or aurally perceived.

Duration of stimulus is an interesting factor. When the student reads the printed page and looks at the pictures, he can regulate his own speed. The medium itself is persistent. When the student is presented a sound film or a video tape, both words and pictures are transient: he has no control over how long he can look or listen.

An audio tape with a panel book splits the stimulus on the frequency/timing dimension: the words are transient, but the pictorial contained in the panel book is persistent. Relative to form of stimulus, much has gone before relative to whether the verbal should be visual, aural, or both.

Stimulus relates to communication one way: to the student. Response is where the student is expected to communicate back. Three forms are distinguished: overt, which may be written or spoken, with well-known advantages and disadvantages when students work in a group; and covert, where only the student knows his response: it is not communicated to the teacher.

The effectiveness of presentation upon learning is postulated as varying, possibly in different ways with varying content, according to the frequency of response demand, as well as the form. How often is the student asked a question relating to what he has heard or read; once a minute, once every three minutes, etc., or not at all?

The final capability within the matrix is management, a term which refers to a basis for a decision to change the presentation, based on student response. Where the response is overt, the basis for decision is obvious. Where it is covert, possibly the expression on the student's face provides a clue, or the student may only make a personal note for his own future reference.

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[2] "A Behavioral Approach to Instructional Design and Media Selection" by Tosti and Ball, 1969.

TABLE 8

System Capability Matrix and Dimensions of Presentation

System Capability	Attributes of System Capability	
	Form	Frequency/Timing
Stimulus	Stimulus Representation Verbal - written Verbal - spoken Pictorial	Duration Transient - persistent Length of time the presentation remains intact: (a) low (b) intermediate (c) high
Response	Response Demand Overt - written Overt - spoken Covert	Response-Demand Frequency Infrequent - Frequent Frequency of response required: (a) low or zero (b) intermediate (c) high
Management	Management Form Repetition Multilevel Multiform Error-diagnostic	Management Frequency Infrequent - Frequent Frequency of decision to change presentation: (a) low or zero (b) intermediate (c) high

Four forms of management selection are considered: repetition, which means the part suspected of not being absorbed by the student is merely repeated, in whole or in part; multilevel, which means the remedial material provides material at a different level; multiform, which means that the form of presentation is changed, probably for reinforcement; and error-diagnostic, which means the student's incorrect response is correlated with a basis for error, and remediation is administered based on that diagnosis.

Management frequency can vary, as can response demand frequency, on which it depends. Management frequency may be the same as or lower than response demand frequency.

The research on this project aims at measuring along these different capability dimensions, based on routine, through different modules at different stages through the course.

Practical Limitations to the Research Ideal

An essential feature of such research is that the system capability be changed only in the dimensions tabulated. This sounds simple to do. At one stage, it was argued that to achieve this the spoken word used for comparison must be equally emphasis free, because a student reads the printed page without emphasis. The emphasis he must supply for himself.

As of the time of observation, video tapes were being made with insistence that the verbal presentation content is word for word the same as the texts against which it is compared, although readers were sought who either knew the subject, or, by being professionals at this work, sounded as if they did!

Programming Limitations

Whether programmed modules used a printed text or a taped or filmed counterpart, the research design resulted in an insistence on identical presentation. This presented difficulties of a purely mechanical nature. One of the writers of intrinsically programmed texts insists that the programming results in the student who takes a "correct" course doing a minimum of page turning, while any reference in the programming (resulting either from correct or incorrect responses) results in the student turning not more than eight pages to find the next frame.

This establishes a standard for ease of use with printed programmed texts. Film and tape versions of programmed instruction have no corresponding dimension, because automation of program frame selection, keyed to student responses, takes "frame finding" out of the student's hands.

Another basis for difference involved the need for using a reader who could suitably inflect his voice for the tape recorded modules (audio and video) and rewriting the printed text so a reader was less likely to encounter ambiguity. But oral expression can eliminate ambiguity in the spoken word, so this raises the problem: do both texts have to be changed to maintain identity? Research design insists "yes," but magnitude of effort imposes constraints.

Related Conflicts

These basic conflicts between research and development have shaped differences of opinion ever since the project began. But this has not prevented tremendous strides from being made. To appreciate what it is like to work on this project one must see how this central conflict, which evidences itself in a variety of ways, creates both conflicts between goals and conflicts between people.

The whole design of the project has become exceedingly complex, as the production responsibility tree (Figure 4) shows. And that is only one form in which such a project tree could be drawn. The tree would become quite complex if the various steps, shown in the tree as clusters of subproducts, were delineated.

As this profile states, the dual foci of the project produce products of interest to different agencies: the Academy gets the course developed and WLC gets the benefit of the research for future projects. This naturally tends to mean that the Academy staff emphasizes the need for a quality course and tends to object if or when the needs of research appear to be intruding against that objective.

The previous statement could be misleading without qualification. The conflicts evident present some apparent contradictions. According to policy both the project staff and the Academy staff are committed to the need for change. Evidence from the project suggests that the need for change, rewriting, and modifying, versus the motivation to retain material as it is, finds mixed supporters in each agency and according to individual circumstances.

A principle that is unquestioned, but that periodically creates a stir, is that the language of the course shall be "Navy" where references to such things as chain of command occur.

As well as the obvious conflict between the goals of research and development, with some more or less general alignment between research and the project staff, and between development and the Academy staff, another goal intrudes itself into the picture: that of the midshipmen. Their goal is to get satisfactory grades in their course work. Their main concern is with graduating on schedule.

The Leadership, Psychology and Management course is just one course of many to these students, albeit an important one. Although they are subjected to talks and "advice" with the purpose of encouraging them to cooperate with research aspects of the course development, their primary objective as individuals is, understandably, to secure high grades.

For example, one objective of the research is to compare the use of presentations that employ transient stimuli for both verbal and pictorial components, with the use of presentations that employ transient verbal stimuli with persistent pictorial. This involves video tape for the former, and audio tape with panel books for the latter.

Due to pressure on their time, each student is concerned, as far as possible, with selecting the media which suit his individual needs best. Thus, one student will prefer audio tape and panel book. One such student commented that he could listen to the tape while doing something else, such as shining his shoes, and study the panel book at his leisure.

Another student may prefer the video tape, because he has to concentrate during the transient presentation and finds himself able to retain sufficient information that way to obtain adequate grades, without reinforcement by a more persistent presentation. Video tape thus optimizes this student's utilization of his time.

To average out differences due to individual student learning characteristics the intent of the research design is to route students so individuals get different media during different segments of the course. Different students are interchanged in varying sequence, to enable the effects of different content to be separated from effects due to difference in student preference, etc.

However, the fact that each student's individual goal is to attain satisfactory grades causes the individual student to use ingenuity to deviate from his assignments. What matters to the student is achieving qualifying grades at each segment of the course, regardless of which module is studied (e.g., audio or video tape) during any particular segment preparatory for the test (which is the same whichever presentation module is used for that segment).

Thus, a student who prefers audio tape may borrow this presentation from a classmate who has that medium assigned to him, without notifying the faculty or coordinating staff. Unless this deviation is discovered it can serve to invalidate the data emerging from the research, because results actually obtained (in this instance) by studying with audio tape get credited to use of the video tape module.

Various measures are used to track this kind of deviation, including one that was somewhat accidental. One of the coordinating staff has an apparent capacity for establishing very good rapport with the students. She does her best to persuade them to comply and, whether or not she succeeds every time, she keeps quite close tabs on them. This helps to keep the records straight.

Character of the Course

The character of the course can be described by comparing its subject matter with that of the courses that formed the subject of two other projects, not the subject of this observation. One of these was a science course, the other an economics course. Science is viewed as a "hard" subject, dealing with well-established specifics. Economics may not be as hard as science, but neither is it as "soft" a subject as Leadership, Psychology and Management.

This last course deals exclusively in relationships with people, and thus is the "softest" course of all three. This compounds the problem somewhat. The general subject area overall is one in which authorities differ more widely than they do in either of the other subject areas, science or economics. This is not really one subject area, but three overlapping areas, leadership, psychology, and management, in which the best authorities in one area differ with the best authorities in another.

A considerable proportion of the studies in each of these subject areas has taken place in other than services situations. The present course takes cognizance of this by presenting a broad coverage of different concepts of, or bases for, leadership, with the emphasis being placed on the variety of roles the Academy graduates will have to exercise.

Even with such prescriptions, the qualities of leadership are somewhat intangible, dependent on individual personality traits that each can ultimately utilize in a manner peculiar to himself. Leadership or management "style" may not vary as widely in a service setting as it does in a business or industrial setting, for example, but in the last resort, it is still very much subject to individual idiosyncracies.

How do these variables influence a multimedia course, the development of which is already combined with a research design? They do not simplify matters! It is to the credit of the project that the Director of Programs at the Academy, who oversees all three projects, while commending each project for good features in the way that project was handled, commended this one on the professionalism with which it was handled.

To interpret such a commendation requires an identification of precisely what he meant by "professionalism." But that is another intangible. This was his impression, as a professional himself. His own presentation on the matter suggested that his area of expertise is in instructional design: he is intensely aware of the complexity of the dimensions involved in the programs he is directing.

Chapter VI: Training Implications

On this project, every man hired and every subcontractor engaged was selected on the basis of competence for the particular item or area of work involved. For this reason, any attempt to list training suggestions obtained from this project would read like a duplication of many of the enablers listed under the products connected with the work involved.

A strongly emphasized common demoninator, across many of the staff, was the inclusion of a background from the Naval Academy, or from some other service academy, possibly with subsequent Navy experience. While not every individual engaged on the project had such a background, by far the majority of the responsible personnel did.

As people were used for the documented backgrounds and the demonstrated competence they possess, and some filled more than one "slot" on this basis, it would be difficult to enumerate training implications, either for general work on such a project, or for work on specific parts of it. Rather, if a person possessed some expertise that fitted a "vacancy" within the project, then he would be eligible to fill that spot.

Appendices

Appendix A: Listing of Product Standards, Tasks, and Enablers

The following listings are headed by the products identified in the previous chapters. As the listing is rather extensive--although not exhaustive by any means--no comments are offered, unless there appears to be some specific reason for comment. These statements were extracted from discussions with interviewees and were coded into their respective category sets. The selected code precedes the statement and indicates the following for:

STANDARDS

Code J:	Structure of Standards.
J-1	Standards against which outputs are judged. (output oriented)
J-2	Standards against which processes and/or operations are judged. (process oriented)
Code LM:	Primary Categories of Standards.

TASKS

Code NO:	Clusters of Tasks

ENABLERS

Code S:	Structure of Enablers.
S-1	Knowledge.
S-2	Skill or ability to perform.
S-3	Sensitivity or awareness.
Code UV:	Primary Categories of Enablers (knowledges, skills, or sensitivities).

The codes associated with these three categories (standards, tasks, enablers) are the same both here in the listing and as previously cited in Chapter III tables.

P-02: Terminal Objectives for Course Segments

STANDARDS:

J	LM	
1	04	Terminal and enabling objectives are clear/understandable.
1	19	Objectives are related to the materials.

1 09 Modified objectives agree with changes in the text-content outline.
1 14 Acceptancy by sponsor.

TASKS:

NO
01 Analyze former course for areas of learning it covers, results it expects.
02 Write objectives for each section working from new mediated course content.
02 Negotiate each objective with user for acceptance.
04 Build one terminal objective per major subdivision of every content outline.
06 Revise objectives on basis of added/deleted materials in content outline.
06 Delete objectives on basis of revised content outline.

ENABLERS:

S UV
1 08 Knowledge of course content in terms of what/where material covered.
1 08 Knowledge of what user wants taught.
1 03 Knowledge of purpose of terminal objectives, enabling objectives.
2 14 Skill in writing objectives.
2 02 Skill at negotiating acceptance or modification of each terminal objective with user.
2 02 Ability to use diplomacy in working with writers.
2 06 Ability to organize skill in explicating objectives.
2 18 Ability to correlate material with terminal objective.
2 08 Ability to read carefully--to see that the objectives and material correlate and correspond.
3 10 Sensitivity to the interrelationships in deriving enabling objectives from terminal objectives.

P-03: Enabling Objectives for Course Segments

STANDARDS:

J LM
1 14 Acceptance by sponsor.

TASKS:

NO
04 Build enabling objectives from course content outline.
21 Work with writers on developing enabling objectives for each terminal objective.

(Notice different approach adopted in these tasks.)

ENABLERS:

S	UV	
1	08	Knowledge of what sponsor wants.
1	03	Knowledge of purpose of terminal objectives, enabling objectives.
2	14	Skill in writing objectives.
2	02	Skill at negotiating acceptance or modification of objectives for each section with sponsor.
2	02	Skill in diplomacy in working with writers.
2	06	Skill in organizing/explicating objectives.
3	10	Sensitivity to interrelationships in deriving enabling objectives from terminal objectives.

P-04: Content Outlines for Course Segments

STANDARDS:

J	LM	
1	14	Acceptance by sponsor.
1	09	No parts missing that are important.
1	07	All parts are clear.
1	09	Material is not redundant.
1	09	Material is not oversimplified.
1	04	Clarity--material is clear.
1	04	Conciseness--material is concise.
1	17	Examples are appropriate.
1	19	Examples are "good" for point they are to make.
1	07	Examples are not too dramatic.
1	05	Material is appropriate for the target population--the content of the material is appropriate.
1	05	There is no unnecessary information (too much detail/depth) in content outline.
2	07	Writers have completed the task or product.
2	04	Schedule adequate--deadlines have been met.
2	08	Writers' questions have been answered.

TASKS:

NO	
02	Work with context analysis and writers to clarify course content.
03	Determine final format of content outline.
03	Relate all objectives to former course areas.
03	Decide on new weighting of parts--which areas should be expanded, which contracted.
04	Build content outline by topic which will work in the whole, part traditional, earlier course.

04 Assemble parts of content outline into booklet form.
04 Type content outline in standard format.
06 Remove redundant material from content outline.
06 Rearrange material within content outline.
06 Revise content outline based on comments from implementations supervisor and subjective opinion.
06 Submit content outline to review for recommended changes.
06 Correlate/correspond content outline with course materials.
06 Insure same verbiage between content outline and materials.
06 Add/delete examples where necessary.
06 Determine parts that must be retyped or where can cut and paste.
06 Review for mechanical errors.
06 Revise content outline based on current needs and changes.
06 Study outline and suggest deletions and changes.
06 Delete nonessential material from content outline.
06 Compare subcontractor's recommendations against original list of items on contract outline.
06 Check to see if course outline includes all parts I feel necessary.
07 Negotiate with sponsor for acceptance of each part. (This has never stopped-still going on.)
07 Work toward concurrance/nonconcurrance on recommended changes.
12 Assign writers' tasks--corresponding/correlating content outline with course materials--based upon revisions.
12 Determine amount of time it would take a writer to review correspond/correlate content outline with course materials.
12 Determine a production schedule.
12 Interact with consultant about writing outline.
14 Submit content outline and recommended changes or modifications to implementation supervisor for review/approval.
14 Provide writers with clarification in relation to corresponding content outline and course material.
14 Double check writers' work against revision specifications to see that specified changes were made as required.
14 Apply for criteria: clear, concise, complete, and correct to revision process.
14 Ask other members of the staff for their judgment on technical topics.
14 Ask sponsor to resolve conflict over quality issues.
19 Negotiate with sponsor for emphasis, agreement on weighting of subjects of course.
20 Discuss in conferences the performance of staff, i.e., the writers.

ENABLERS:

S	UV	
1	23	Knowledge of what midshipmen already know.
1	05	Knowledge of military circumstances through experience.
1	05	Knowledge through experience of midshipmen's life.
1	04	Knowledge of programmed instruction, principles and techniques.
1	05	Awareness of sponsor's standards and context.
1	08	Knowledge of traditional previous course content.
1	05	Knowledge of context, methods and experiences.
1	08	Knowledge of mechanisms/operations (within content) to make recommendations on the content outline.

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1	07	Knowledge of multimedia/mode used with a particular segment (knowledge of what syndactic, linear tests, etc. are).
2	06	Ability to write programmed frames of instruction.
2	32	Ability to proof read for mechanical error.
2	18	Ability to proof read for consistency.
2	11	Thoroughness in work--ability to be thorough.
2	05	Ability to plan work--in terms of time and space.
2	14	Skill in writing clarity, etc.
2	02	Ability to work with sponsor personnel in negotiating content of course outline, changes, etc.
2	11	Ability to persevere in determining sponsor's desires thru negotiating.
2	18	Skill in determining what is nonessential in content outline.
3	05	Previous experience with content materials--helpful.
3	30	Sensitivity/awareness of end-use of the product--used at academy by second-class midshipmen.
3	30	Sensitivity to the context (user agency)--related to the above sensitivity.
3	31	Awareness of the effect of changes on the rest of the materials--awareness of the interrelationships of the materials.
3	02	Appreciation for time and what can be done in a time segment.
3	17	Awareness of personalities of staff you are working with.
3	02	Awareness of staff capabilities in relation to the job.
3	31	Awareness of the nature of the product and the steps/pieces involved in producing that product.

P-05: Syndactic Text Modules for Course

STANDARDS:

J	LM	
1	07	It looked all right to me.
1	07	Concise--my feelings.
1	01	Self-check that product is complete (covering of all objectives), correct.
1	01	Material correlated with content outline and the terminal and enabling objectives.
1	04	Language is appropriate, i.e., material has been stated in best possible way.
1	12	The final statement reflected the objectives clearly.
1	15	There is no redundancy, it is concise enough.
1	08	Clear--concensus of staff.
1	01	Complete--reference is to content outline.
1	24	Correct--military jargon, etc.
1	13	I accept opinion of other staff more expert in content areas.
1	13	Chief editor accepts the unit.

1 13 Approval by subject matter expert of any examples of military.
1 14 Acceptance by sponsor.
1 13 Editor approves clarity, corrections and grammar, spelling.
1 06 Students found material interesting.
1 04 Test data does not show any frames to be misleading/confusing.

TASKS:

NO	
01	List the topics to be covered in text unit.
01	Read material primarily texts in the office--in relation to the subject matter of a particular syndactic text (literature review).
01	Collect textbook material to read/review relative to content.
01	Consider level of material in terms of audience (midshipmen).
02	Determine which material (from textbook review) will be used to support a particular point relative to subject matter.
03	Specify and/or create graphic materials to be included in syndactic texts.
03	Number the topics in sequence of presentation.
03	Correlate content outline with material for syndactic text.
03	Determine number of summaries to be included within each syndactic text--there are major parts/sections of the text.
03	Establish guidelines/steps to follow in writing a syndactic text format.
04	Use progress checks as a reference in writing materials.
04	Think of original/sensible ways of presenting and testing information/content.
04	Write test items to cover basic points in the syndactic text.
04	Write summary/overview part of the text.
04	Write frames--an expansion and check of points covered in original summary.
04	Scramble/rearrange posttest items and answers--same as pretest items after summary.
04	Obtain the master material to be summarized.
04	Obtain the terminal objective for this unit.
04	Rewrite the topic titles to fit into space required.
04	Write new summary of segment which needs revising, accommodating criticisms of information.
04	Write new linear frames to go with summary.
04	Write new summary quiz to match new summary in content.
04	Produce the interview form for interviewing midshipmen.
04	Type material for camera copy readiness.
05	Interview midshipmen about effect of product.
05	Use an interview form during the interview of the midshipmen.
06	Utilize revision related comments from the user agency as to major points to cover in syndactic text.
06	Modify content outline on basis of readings (literature review relative to syndactic text).
06	Review syndactic text in relation to content outline to make sure every point in the outline has been treated/acknowledged.
06	Check to see that progress checks correspond until material is actually taught.

06 Check that terminal objectives and enabling objectives for the segment were covered.
06 Edit entire text of segment for more types.
06 Improve phraseology throughout entire segment of course.
06 Read the segment which has been sent back for revision as it stands, and read comments which indicated need for revision.
06 Check product against criteria.
06 Prepare recommendations for modification.
06 Make recommendations for changes in instructional material.
06 Proof read material--typists/production/writer/editor.
06 Modify/incorporate recommended changes from user agency and editor.
12 Discuss instructional examples with subject matter expert for correspondence with reality of military experience.
14 Send over pieces of the text for the user agency to review and make suggestions and/or corrections.
14 Review materials sent by the contractor to the user.
16 Assist other writers in writing a syndactic text.
19 Interact with sponsor as to nature of the material in syndactic text.
21 Provide all writers with a set of format guidelines.
21 Hold committee meeting to review depth core materials. (Those so specific it required more specific expertise.)

ENABLERS:

S	UV	
1	08	Knowledge of content outline so that proper objectives are covered in revised form.
1	03	Knowledge of function of TO's and EO's (terminal objective-enabling objective).
1	02	Knowledge of syndactic course structure.
1	08	Knowledge of leadership course content.
1	07	Knowledge of the media being used for each section.
1	19	Knowledge of jargon used by midshipmen.
1	06	Knowledge of military practices and terms used.
1	12	Knowledge of who to ask if knowledge not in head.
1	17	Ability to write concisely.
1	08	Knowledge of objectives in course and specific unit.
1	08	Knowledge of contents of course and specific unit.
1	17	Knowledge of rudiments of writing (instructional materials).
1	19	Knowledge of Navy jargon.
1	08	Superficial/introductory knowledge of content area of syndactic text.
1	04	Knowledge of how to write test items--primarily multiple choice type items.
2	14	Ability to write a paragraph--related to the summary.
2	06	Skill in ways of presenting and testing material--frame writing styles.
2	10	Ability to work with data--read data sheets to pin point test items that might need revision.
2	19	Ability to specify graphic illustrations/charts to accompany text.
2	33	Ability to draw the illustrations/figures to accompany text.
2	27	Ability to type.

2	26	Ability to look at index and determine where most useful information relative to a particular topic would be found in the publication.
2	06	Ability to maintain a continuity or flow in the sequence of frames that are written in a syndactic text.
2	09	Ability to logically approach a subject or topic.
2	14	Skill in writing.
2	11	Ability to be persistent and painstaking in reviewing materials.
2	01	Experience in teaching subject matter.
2	14	Ability in writing in order to write readable examples, portions of text.
3	17	Sensitivity to the specific characteristics of target students.
3	20	Sensitivity to needs of students beyond class circumstances.
3	27	Sensitivity in the balance in writing a paragraph--points in paragraph as specified by topic sentence have been covered.

P-07: Single Concept Films

STANDARDS:

J	LM	
1	06	Product holds interest of students.
1	12	Communicates as registered by statistical results.
1	14	Approval of sponsor.
1	16	Does it measure up to user's expectations, e.g., commercial TV.

TASKS:

NO	
03	Prepare scenario for film presentation to show context of "incident."
03	Work on shots to effectively present problem or question.
04	Write a script of incident for depth core module.
05	Pose problem for class discussion.
12	Organize filming schedule--about one day for a 3-4 minute film.
13	Purchase 16mm camera, plus necessary accessories.
13	Obtain acting talent from sponsor.
14	Have script approved by sponsor.
04	Rehearse performances, coach them.
06	Edit film (sit down with professional film editor).
14	Submit to viewing by academy for review.

ENABLERS:

S	UV	
1	22	Knowledge of A-V hardware for media.
1	04	Knowledge of production technique relevant to individual media.
1	17	Knowledge of audio and print writing techniques.

2	15	Ability to read as if knows material (narrator).
2	16	Ability to adapt script, etc. to each medium.
2	18	Ability to fit everything into scope of medium being used.
2	20	Ability to make creative decisions.
2	14	Ability to write for both audio and print.
2	14	Ability to write dialog--not stilted as for print.
3	27	Sensitivity for taste in varying shots.
3	13	Use of concise, simple language--not educationese.

P-08: Video Tape Modules

STANDARDS:

J	LM	
1	04	Quality of voice is animated and speaker did not stumble over words, mispronounce.
1	09	Speaker followed script.
1	24	Jargon was user relevant.
1	09	Speaker did not pause so long it was distractive.
1	09	No words were missed here or there.
1	07	Music was adequate (background).
1	19	Visuals were adequate and appropriate to topic.
1	18	Camera shift was appropriate and timely.
1	06	Reaction of students to tape was positive.
1	12	Communicates as registered by statistical results.
1	14	Approval of sponsor.
1	16	Does it measure up to user's expectations, e.g., commercial TV.

TASKS:

NO	
01	Determine where training aids (visuals) might be needed in conjunction with the presentation.
06	Suggest corrections in video tape in both format and content.
06	Suggest changes in verbal script.
06	Edit scripts for accuracy.
03	Remake video visuals for different (3) response mode (as against the 20 response mode).[a]

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[a] One of the research experiments addresses itself to the effect of response-demand frequency on learning. To determine this, lecture units are made up with different response-demand rates: the high response-demand frequency tapes inject 20 questions to the student during the unit (module) while the low response-demand frequency tapes inject only three questions; the three questions are selected by eliminating all questions except the three that occur nearest to the desired intervals through the tape.

03 Make sure equipment hardware and software are compatible.
03 Plan content to suit medium in interesting manner.
04 Write/prepare script.
04 Make copy of first script for approval.
04 Transfer script to teleprompter.
04 Organize hundreds of slides for visuals (and panel books).
04 Transfer video visuals to 35mm slides.
04 Duplicate video visuals for panel book (for audio tape).
04 Prepare visuals for appropriate superimposition.
13 Select reader--someone who knows or is professional reader.
13 Hiring of subcontractors to care for direction production.
13 Purchase video tape.
13 Hiring of talent for performing lecture material.
13 Select talent personality to suit intended presentation realistically.
53 Contract local commercial TV station to use facilities.
53 Contract another facility to transfer to one-inch video tape.
04 Record the video tape.
06 Edit video tapes for errors of commission and demission.
06 Detect errors in video tape--both technical and in terms of jargon.
06 Provide comments as to quality of video tapes.
06 Insure that script was followed by the speaker who was cutting the tape.
06 Edit video tapes.
06 Edit errors, electronically, as made.
06 Rewrite many scripts for better video contact with viewer.
06 Eliminate unnecessary big words--be concise.
04 Get tapes duplicated.

ENABLERS:

S	UV	
1	22	Knowledge of audio-visual hardware for media.
1	04	Knowledge of production techniques relevant to individual media.
1	17	Knowledge of audio and print writing technique.
1	04	Knowledge of capabilities and limitations of video as electronic medium.
1	22	Knowledge of how to run video tape machine.
1	19	Knowledge of user relevant terminology.
1	05	Knowledge of user procedures and policy.
2	03	Ability in designing and coordinating video and visual elements of presentations.
2	05	Coordinating all the people involved at one time or in sequence.
2	15	Ability to read as if he knows material (narrator).
2	16	Ability to adapt script, etc. to each medium.
2	18	Ability to fit everything into scope of medium being used.
2	20	Ability to make creative decisions.
2	14	Ability to write for both audio and print.
3	13	Use of concise, simple language--not educationese.

P-09: Audio Tape Modules

STANDARDS:

J	LM	
1	06	Product holds interest of students.
1	14	Approval of sponsor.
1	12	Communicates as registered by statistical results.
1	16	Does it measure up to user's expectations, e.g. commercial TV.

TASKS:

NO	
04	Transfer sound track from video to audio tape.
04	Develop scripts complete with instructions to reader re: pausing, emphasis, etc.
04	Get panel book made up to correspond with video visuals.
04	Duplicate tapes in house.

ENABLERS:

S	UV	
1	22	Knowledge of audio-visual hardware for media.
1	04	Knowledge of production techniques relevant to individual media.
1	17	Knowledge of audio and print writing technique.
2	15	Ability to read as if he knows material (narrator).
2	16	Ability to adapt script, etc. to each medium.
2	18	Ability to fit everything into scope of medium being used.
2	20	Ability to make creative decisions.
2	14	Ability to write both for audio and print.
3	13	Use concise, simple language--not educationese.

P-12: Computer-aided Instruction (CAI) Modules

STANDARDS:

J	LM	
1	12	Statistically good--better than 80/80 performance.
1	05	CAI module proves more effective than other media.
1	20	Whether it (CAI module) communicates other than as indicated statistically.

TASKS:

NO	
04	Duplicate material for use on other media, as comparison and to replace.
06	Deleted some irrelevant materials from instructional program.

ENABLERS:

S	UV	
1	02	Educational technology as taught by Skinner et al.

P-13: Linear Programmed Modules

STANDARDS:

J	LM	
1	04	Subjective evaluation--appearance of the texts was good.
1	18	Subjective evaluation--language of the texts was appropriate in relation to the material and target population.
1	12	Student performance--80% received scores of 80% plus, therefore material is performing its function (teach).

TASKS:

NO	
01	Review reference materials--textbooks relative to content material of the texts.
03	Correlate content outline with materials in the linear texts.
03	Incorporate material from references into writing of the frames.
03	Select examples, usually relevant, to support material.
04	Write/create frames.
12	Confer with subject matter experts as to appropriateness of examples to be included in the linear texts.
19	Provide implementations and supervise alternative ways of expressing a particular point in the material.
21	Follow directives from the user agency for specifications in revision of the materials.
23	Participate in decision of final format/style--input and information.
59	Interact with implementation supervisor for further clarity/specifications in revising linear materials.
04	Type material in camera-ready form.
06	Rewrite frames--content within linear text.
06	Add and/or delete frames.
06	Revise style of frames--bring paragraphs together; rearrange order of frames, add examples.

06	Review/proof-read final materials of linear text.
06	Revise sentence-structure/grammar--does not change the meaning.

ENABLERS:

S	UV	
2	04	Ability to revise frames relative to feedback from testing.
2	06	Ability to write a frame.
2	02	Skill of tact--particularly in dealing with the user agency.
2	23	Ability to persuade or convince of your viewpoint.

P-14: Intrinsically Programmed Modules

STANDARDS:

J	LM	
1	22	Shortest and fastest path through program results from correct answer.
1	12	Organized so that no response requires turning more than eight pages either way.
1	07	Intuitive feeling that material covers most probable errors that student can make.
1	09	Avoidance of questions that elicit irrelevant responses.
1	09	Avoids too small steps that make material appear trivial.
1	09	Absence of too much repetition--more than necessary for normal emphasis.
1	22	Elicits reasonable responses after making specific point only once or twice.
1	01	Points to be taught covered thoroughly from several aspects.
1	16	Quality as judged against rules given in "Good Frames or Bad," a text authored by Dr. S. M. Markel.
1	12	Student statistical performance meets 80/80--80% of students make 80% correct responses.

TASKS:

NO	
05	Test material with sampling of three to five students at contractor site.
06	Edit, revise, "patch" copy in rush to meet deadline.
06	Apply references from faculty and subject matter to experts for revision of textual content.
06	Rewrite sections based on deficient student (statistically) performance.
06	Patch "errors" shown by students making incorrect responses.
12	Retype copy marked up for sending to printers.
04	Bind and staple copies of programmed texts.

54 Textual specifications given and explained to subcontractor.
54 Examine and critique text (copy received from subcontractor).
63 Decide to redesign sequencing for programmed text.
03 Prepare schematic for producing modified instructional sequencing that meets standards of programming.
11 Train other writers to produce optimumally programmed intrinsic programmed texts.

ENABLERS:

S	UV	
1	02	Knowledge of "process of Preparing Valid Effective Learning."
1	04	Knowledge of good programming frames from bad frames.
2	06	Ability in writing suitable sequences for intrinsic programmed learning.
2	08	Skill in interpreting "Preparing Valid Effective Learning."
2	06	Ability in producing schematics for scrambling programmed sequences.
2	01	Experience as military instructor.
2	14	Ability to avoid contradictions or apparent contradictions in written material.
3	30	Ability to think like a student.

P-16: Overall Research Design and Evaluation Plan

STANDARDS:

J	LM	
1	16	Compares favorably with other efforts experienced outside of present agency.
1	05	Quality enhanced by virtue of attending to a long term unit of instruction where little work has been done.
1	09	Data gets into all the cells of the research design and comes from the right subjects.
1	21	Variables which contaminated earlier efforts were uncovered and controlled.
1	08	Classification of test items (acquisition or application) was confirmed by others.
1	22	The run of the course was able to follow the chart set by the research design and adhered essentially to the conditions set.
1	23	Successfully constrains instructional implementation to research design specifications.
1	23	Should be changes in content when system design is used.

TASKS:

NO	
01	Examine all objectives of all segments of the course for the purpose of creating a "content map."

01 Develop rationale for requesting an unscheduled run of the course.
01 Read all back reports to prepare to handle research and evaluation coordination after two years of operation.
01 Study the implementation aspects of the first run of prototype course materials (Phase 1).
01 Study and develop hypotheses about possible subtle effects of slight variation in instructions to students taking course.
02 Confer with users and developers rating the course on how best to give users a sense of the integrated wholeness of the course.
02 Develop hypotheses about various levels of information which could be given students about the various experimental conditions used.
03 Confer with consultant on guidelines for determining when effects of learner characteristics could be examined with respect to 137 characteristics listed, 44 students in course.
03 Develop general specifications for implementing a confirmation answer sheet to student managed progress check materials.
03 Confirm sequencing of instructional objectives by consulting with content specialist.
03 Develop a plotting chart for all segments of the course, including all variables manipulated within.
03 Assign random selection of students to cells within the plotting chart, sequencing various groups differently through the variables.
03 Confirm correct treatment label of each module in terms of the instructional condition within.
03 Confirm that the number of groups plotted corresponds to the number of groups necessary to address research questions.
03 Confer with consultant with regard to the need to "force" some students through materials previously routed around.
03 Provide materials production personnel with specifications for materials to be developed based on research questions.
03 Provide materials production personnel with specifications for developing and implementing test items to establish norms.
03 Design parallel modules using identical presentation in different media.
03 Vary response demand and management frequency as defined by research design.
04 Rewrite terminal objectives for each instructional unit into content statements appropriate for a content map.
05 Maintain record of instructor-student interaction time (tutoring).
05 Maintain record of total time instructor involved within instructional system.
05 Maintain record of time required for course administrator (materials control clerk).
05 Assess from data which media forms in the instructional materials appear to be most effective, liked by the students.
05 Tryout initial instructional unit prototypes on small group of students to assess operability, etc.
05 Analyze data from tryout to determine required revisions of instructional material.
05 Review with field-setting instructors any problems they experienced in the first experimental and developmental run of the course.

06 Examine computer documents utilized in course to determine refinements necessary to accommodate course users equipment likely to be found in a broad range of settings.

06 Determine, from Phase 1 data, a tentative optimal frequency for building-in response sensitive feedback in instructional materials.

06 Update research design to incorporate an examination of the effects of use of confirmation answer sheets vs. no confirmation.

06 Update research design to incorporate an examination of the effects of use of content maps on student performance.

06 Confer with instructors about possible discrepancies between intended implementation of the course and actual implementation.

06 Recommend printed version of all media dependent materials be included in research design if such backup is produced.

06 Update research design to demonstrate effects of use of identical items in pre- and post-criterion tests.

06 Determine data contaminated as a function of any incorrect implementation procedures in Phase 1.

06 Determine need to add an unscheduled run of course to obtain appropriate data for research questions not answered.

06 Review with field setting all test items for appropriateness and whether each represents an acquisition or application performance.

06 Review student questionnaire responses and interpret in light of student performances in the course.

12 Monitor personnel who are documenting cost factors involved with development, implementation, and operation of course.

12 Delegate task of refining of instructions in use of instructional materials to others.

19 Interact with instructors and faculty supervisor regarding use of identical items in pre- and post-criterion tests.

19 Interact with field setting to obtain the required cooperation in implementing course rigidly enough to support research.

19 Make clear the manner in which each student is to be sequenced through various media to support the research design.

19 Make clear to the field setting the necessity for student response modes being limited only to that specified.

19 Review with field setting all course implementation instructions including specified paths for specified students.

19 Explain to students and instructors the rationale for not using response sensitive feedback in the early development of materials.

19 Confer with instructors about placing trust in the student in developing the strategies for response sensitive feedback materials.

21 Participate in staff discussions regarding the purpose, intent, and content of reports to be written.

21 Participate in staff and user meetings regarding size of instructional booklets and relative costs for ongoing utilization.

ENABLERS:

S	UV	
1	03	Know one statistical design from another and what the implications and assumptions of each are.
1	03	Knowledge of the meaning and value of behavioral objectives.
1	04	Knowledge of how much one can do with a computer in assisting and/or managing instruction.
1	03	Awareness/knowledge of the typical problems which can beset a research design and confound the data.
1	03	Knowledge of the rationale behind various statistical designs.
2	02	Ability to respond to questions or criticisms that convey an appreciation of the concerns expressed.
2	02	Skill in sorting out and maintaining a consistent posture in relation to where each area of expertise resides.
3	16	Sensitivity to experimental design as a means of addressing relevant questions.
3	11	Sensitivity to instructional systems as an important construct in developing technology in education.
3	21	Sensitivity to the minor details that can contaminate or confound the real meaning of collected data.
3	03	Sensitivity to the needs of teachers and how those needs can confound developmental efforts if not attended to.
3	18	Sensitivity to test construction that guards against self-fulfilling measures.
3	14	Sensitivity to reality and what is possible to achieve within the limits of a project.
3	16	Can't be perturbed or easily upset by those who cannot "see the obvious" (understand the need for purposes of research design).
3	28	Willingness to admit to rigidness in one's self and to give a little bit in the face of an impasse.
3	10	Sensitivity to identifying those critical variables in a research effort which should be least confounded by the design.
3	12	Willingness to fill "credibility gaps" between producers and users as they are identified.
3	03	Sensitivity to the need for developers and consumers to start on a common base or framework.

P-17: Instructional Presentation Design

STANDARDS:

J	LM	
1	08	Agreement among group administering course that design is adequate.
1	05	Utility of method for running course (it seems easier).
1	06	Satisfaction (lack of complaints) of student with method.
2	04	All materials ready on time, in right place.

TASKS:

NO	
02	Work with consultants about objectives of presentation design.
03	Establish schedule for students taking tests.
04	Write instructions for students' use of each instructional segment.
04	Get all course segments and testing materials ready for next run.
04	Write new instructor guide.
04	Create methods to keep track of all data (control systems--student data file).
04	Develop form for suggested revisions.
05	Keep records of materials which were handed out (used).
05	Do hand analysis of data to determine percent of correct responses to each test question.
05	Use (administer) form for suggested revision.
06	Help change research patterns for fall to ones which will be possible in classroom.
06	Work out new processes for course administration.
07	Hand out tests and materials.
12	Schedule material from development people on time for fast students.
12	Schedule activities for next run--flow chart of activities geared to calendar.
19	Explicate students' responsibilities out of research design.
19	Define role of instructor, course administrator, student.
19	Motivate students to not sabotage research.
21	Interact with other responsible persons on course administration.

ENABLERS:

S	UV	
1	07	Knowledge of research design of this project in order to correlate instruction efforts with objectives of research.
1	07	Knowledge of course pattern (not content) to interpret to students.
2	17	Skill in reading computer printouts about student performance in order to alter course structure.
2	05	Ability to use, in proportion, time for scheduling.
2	17	Skill in flow chart reading, to use in following directions of research staff.
2	05	Skill in conceptualizing flow chart to direct students.
2	33	Skill in flow chart preparation to direct students.
2	23	Skill in motivating, in working with students to keep course moving.
2	13	Ability to listen carefully to complaints of students in order to modify course, help student.
2	21	Ability to organize, to keep track of all parts of course and materials important to each.
3	22	Sensitivity to when students were sabotaging research to help evaluate data.

P-22: Progress Checks

STANDARDS:

J	LM	
1	01	Test items cover the material included in instructional materials.
1	04	Test items are not ambiguous.
1	19	Distractors seem to be logical distractor test items.

TASKS:

NO	
04	Write test items to produce progress check keyed to the instructional materials.
06	Read instructional materials that test items covered to insure correspondence between test items and instructional materials.
06	Check terminal objectives/enabling objectives to see that they were covered by test items.

ENABLERS:

S	UV	
1	08	Knowledge of the subject matter/content area related to progress-check test items.

P-24: Student Data File

STANDARDS:

J	LM	
1	22	All data filed so it can be found.
1	16	Easier tracking of data, as felt by group, than earlier method.
1	06	Agreement that process does what is intended.
1	13	Agreement by research director that method doesn't compromise research.
1	09	Lack of trouble in data processing.

TASKS:

NO	
01	Figure out what is information needed by research instructor in way of student data file.

04 Make chart of modules, tests, deadlines, student assignments.
04 Keep records on materials handed out.
04 Keep records on course segments completed by students.
04 Invent methods for handling progress and cumulative test data.
05 Show exact units received by each student.
05 Show scores made by each student, either failure or pass by 70%.
05 Check questions missed to give specified remediation assignment.
05 Keep record of the delinquency status of "laggers."
05 Enter test results on student progress chart.
05 Compile record of location of all students at time of test.
03 Check for students using other than assigned media.
05 Gather and send data to data processors.
05 Do hand analysis of data to computer percent of students responding correctly to each test item for use in improving course.
12 Keep duplicate records of all data.
19 Encourage students to take research as well as grading tests.
20 For second failure, refer for tutoring--follow up to see what student gets.
21 Communicate with students through "mail boxes."

ENABLERS:

S UV
1 07 Knowledge or course administration design.
1 07 Knowledge of research design of this project in order to keep data properly.
1 03 Knowledge of hand-sort methods in order to select the required data for each research concern.
2 10 Ability to organize in order to develop methods for storing and retrieving data.
2 11 Ability to take care and patience in record keeping in order to reduce errors in data.

P-25: Student/Instructor Use Guide

STANDARDS:

J LM
1 23 Students use guide--questions reflect understanding of manual information.
1 13 Approved by project manager, program manager.

TASKS:

NO
01 Review all related course materials.

01	Describe the traditional course that the new mediate course is paralleling.
03	Build outline of total use guide encompassing all of the above.
04	Clearly state, in writing, instructor's role.
04	Put in history of the course in leadership at the user agency.
04	Point out that helping research contributes to user leadership.
04	Describe student role in mediated course.
04	Write total guide, using outline as basis.

ENABLERS:

S	UV	
1	07	Knowledge of history of the project.
1	07	Knowledge of research design of project.
1	07	Knowledge of new mediated course functioning in terms of what is expected of instructor and student.
2	18	Ability to sense fitness of material for sponsor's target.
2	14	Skill in writing clearly so someone unacquainted with the course can understand the roles of instructor and student.
3	03	Sensitivity to needs of students.
3	03	Sensitivity to needs of instructor.

P-26: Course Development Model

STANDARDS:

J	LM	
1	17	Is the same as or as good as material on regular course as judged by leadership group.
2	23	Course has changed from regular course, includes explanation of why change.
1	17	Each part of unit fits within meaning of course outline, covering some of the necessary objectives.
1	07	Each segment of writing is acceptable to me in terms of content.
1	11	Segment of course meets criteria in research design.

TASKS:

NO	
01	Analyze all data about traditional course content.
02	Talk with agency colleagues about military needs for course.
02	Build objectives from course outline, one terminal objective for each major segment, two or more enabling objectives for each.
03	List new suggested course content.
04	Rebuild course outlines on basis of sponsor reaction to suggested list.

04 Work with colleagues on final draft of content outline.
04 Finish writing Part 5 for Phase 1 final.
06 Delete parts of course and related objectives to make content outline short enough for sponsor to accept.
07 Negotiate with sponsor representatives about acceptance of components.
07 Negotiate with sponsor about acceptance of components.
07 Get total new course content outline approved by sponsor.
12 Work with agency consultants to work out course content outline for Part 5 to include all specified subjects and develop terminal and enabling objectives for each.
14 Present recommended course content to sponsor for reaction.
20 Provide required course content information from sponsor to project.
21 Interface with individual students when there are problems, or when getting material, briefing, etc.
21 Provide input re: affect, experience of teaching unmediated course to project.
21 Work with writers to write parts of course.
21 Work with writers about Part 5, developing course materials from objectives.
21 Work with consultant about writing outline for strength in teaching patterns.
21 Work with writers about content (sponsor examples) units of component.

ENABLERS:

S	UV	
1	08	Knowledge of previous course content.
1	07	Knowledge of project research design.
2	02	Skill in negotiating with sponsor.
2	30	Ability to be flexible when decisions changed by sponsor.
2	07	Skill in teaching to use in teaching traditional course as it has been taught to compare with experience of teaching new mediated course.
2	02	Ability to work with writers on course content changes from sponsor (interpreting).
2	02	Ability to explain and negotiate with sponsor the course content changes from project.
2	11	Ability to do things over and over without guidelines until they are acceptable.
2	11	Ability to tolerate criticism and rejection of work without losing desire to start over and do it again.
3	16	Sensitivity to military standards: morals, fitness, duty, ideas of leadership.
3	16	Sensitivity to what sponsor would complain about in examples in course material.

P-28: Master Tutor Modules

STANDARDS:

J	LM	
1	06	Product holds interest of students.
1	14	Approval of sponsor.
1	12	Communicates as registered by statistical results.
1	16	Does it measure up to user's expectations, e.g., commercial TV.

TASKS:

NO	
04	Duplicate intrinsic programmed unit on 4-track tape.
04	Program tape for computer operation in response to student selections.
04	Get tapes duplicated.
13	Get readers for script.

ENABLERS:

S	UV	
1	22	Knowledge of audio-visual hardware for media.
1	04	Knowledge of production techniques relevant to individual media.
1	17	Knowledge of audio and print writing technique.
2	15	Ability to read as if he knows material (narrator).
2	16	Ability to adapt script, etc. to each medium.
2	18	Ability to fit everything into scope of medium being used.
2	20	Ability to make creative decisions.
2	14	Ability to write for both audio and print.
3	13	Sensitivity to using concise, simple language--not educationese.

P-29: Structural Communication Module

STANDARDS:

J	LM	
1	04	Material understandable and easy to follow.
1	17	Material is in correct logical sequence.
1	09	There were no discrepancies in the information presented.
1	04	Instructions were clear/understandable.
1	01	No major paragraph/page missing--materials were complete.

1	19	Subjective evaluation--examples were appropriate, and there were enough of them.
1	05	Material is appropriate for target audience (midshipmen).

TASKS:

NO	
01	Review military leadership publication for purpose of extracting examples and case studies.
03	Design of structural communications units by subcontractor.
03	Provide subcontractors with basic content materials for units.
03	Provide specific instructions as to how to use a specific phrase relative to "American" language.
03	Provide military examples around which units could be created or constructed.
04	Rework materials to insure correct format.
04	Write the structural communications units.
06	Edit peculiar British phraseology in matrix statements.
04	Package material in booklet.
05	Do the lesson within the structural unit(s)--work through material.
05	Field test materials with target population types.
05	Record student comments relative to materials.
06	Review/edit the unit material in a structural communication unit.
06	Read materials to insure understanding of content and instructions (trial run).
06	Modify unit material on basis of field test with target population.

ENABLERS:

S	UV	
1	08	Knowledge of American military leadership (user relevant) situations.
1	19	Knowledge of military (user relevant) terminology.
2	18	Ability to detect differences in meaning between item in response indicator and the author's rationale for the item for purpose of revising.
2	08	Ability to thoroughly read through materials to note any errors, misunderstandings, discrepancies.

P-30: CBI-70 Modules

This is a potential form of module that had not, at the time of observation, been used. The CBI70 machine on which the film would be run, if modules are developed for it, was at the project with a demonstration film. However, as no modules have been made, no standards and enablers are listed for it.

STANDARDS:

No information collected under this heading.

TASKS:

NO	
04	Program video and panel-book material to duplicate intrinsic test.
04	Produce 6-track film with cuing.
04	Get films made and printed.

ENABLERS:

No information collected under this heading.

P-42: Content Map

STANDARDS:

J	LM	
1	13	Acceptance by researcher.
1	07	Check by self for completeness.
1	18	Check by self for good looks.

TASKS:

NO	
03	Draw meaningful phrases from course outline enabling objectives and terminal objectives to give cues to students about what it is expected they will learn.
04	Display in flow chart the sequence of segments and relationships.
04	Display terminal objectives and enabling objectives.

ENABLERS:

S	UV	
1	07	Knowledge of course structure in order to display it.
1	03	Knowledge of what is meant by enabling and terminal objectives.
2	05	Skill in flow chart techniques for drawing flow chart of course progress.
2	14	Skill in writing, for phraseology, clarity in explaining objectives to students.
3	03	Sensitivity to students' needs to visualize total course section.

Appendix B: Details on Each Management Responsibility

In Chapter III, the management responsibilities are divided under two headings, Production Management and Environmental Management. On this project, most of the management information obtained was production, as personnel whose primary responsibility was at the environmental management level did not receive formal interviews, although they provided useful contextual input.

As the methodology was in course of revision at the time of observation, the data that follow were collected under one management heading, which is essentially more in the realm of production management than environmental management, although separate categories are given.

Listing of Standards, Tasks, Enablers.

The following are the lists of management responsibilities, using the same format as in Appendix A:

PM-35: Instructional Materials.

EM-36: Budget.

PM-37: Contract (Proposal)

EM-38: Staff Morale.

EM-39: Interagency Cooperation.

PM-40: Product Quality.

EM-41: Staff Hiring.

EM-43: Intraagency Cooperation.

EM-44: Project Accountability.

PM-35: Instructional Materials

STANDARDS:

J	LM	
1	07	Meets own set of standards for quality.
2	04	Meets schedule for timelines.
1	01	(Includes all items on chart of instruction package, i.e., syndactic text, video, etc.).
1	07	Meets own check list for completeness.
1	13	Meets editor criteria.
1	14	Acceptance of each segment by sponsor.

TASKS:

NO	
52	Plan production and delivery schedule to sponsor.
52	PERT production schedules back from delivery date to cover work to printer, typing, proofreading, incorporation of student evaluation data, rewrite, and original writing.
54	Supervise clerical help for promptness, quality.

ENABLERS:

S	UV	
1	08	Knowledge of the course content.
1	08	Knowledge of the course objectives.
1	08	Knowledge of the course content outline.
1	07	Knowledge of sponsor standards.
1	07	Knowledge of course development total package.
1	03	Knowledge of test item writing for preparing questions for tests.
1	05	Knowledge of military leadership to use in preparing examples.
2	19	Skill in planning production schedules.
2	05	Skill in organizing manpower and resources to get things done on time.
2	34	Skill in coordinating various activities as they support each other.
2	29	Ability to work with writers to help them understand and meet standards.
2	35	Skill in language to use in editing and rewriting sections of texts so that they are clear, informative.
3	01	Sensitivity to likes and dislikes of sponsors/users.

EM-36: Budget

STANDARDS:

J	LM	
1	16	This budget similar to previous budgets.
1	16	This budget compares favorablely to budgets of similar projects.
1	13	The boss accepts and approves the budget.
2	11	Actual expenses fall within estimate figures.

TASKS:

NO	
01	Review previous budgets for form and figures.
12	Estimate new figures for budget.
12	Determine fixed costs of project.
12	Estimate nonfixed costs of project.
12	Readjust nonfixed costs to meet budget limitations.
14	Submit budget to accounting office for approval.

ENABLERS:

S	UV	
1	04	Knowledge of accounting procedures.
1	19	Knowledge of accounting jargon.
1	16	Knowledge of accounting forms.
1	11	Knowledge of accounting purposes.
1	11	Knowledge of accounting taxes, depreciation, etc.
1	11	Knowledge of accounting company policy.
1	12	Knowledge of whom to go to for specific information.
1	01	Knowledge of mathematics.
2	13	Ability to listen to experts for suggestions.
2	26	Skill in assessing the sources of knowledge.
2	27	Skill in use of a calculator.
2	22	Skill in estimating expenses.
2	04	Skill in using current operating expenses for projection .

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PM-37: Proposal Contract

STANDARDS:

No information collected under this heading.

TASKS:

NO	
02	Provide guidelines for the hypotheses to be tested in lieu of actual hypotheses.
03	Specify research model to be employed in coordination with instructional materials development.
12	Specify those items (products) to be delivered during period of contract.
12	Specify to whom the products produced are to be delivered.
12	Specify the time schedule for delivery of products from contractor to contractor.

ENABLERS:

S	UV	
3	03	Sensitivity to needs of the educators.
3	03	Sensitivity to needs of R & D centers.

EM-38: Staff Morale

STANDARDS:

No information collected under this heading.

TASKS:

NO	
15	Held weekly conference with staff on Saturday morning to discuss rumors and piece out reality from fantasy.
14	Conduct Saturday staff meetings to plan strategy for next week--we're going to do this; if that doesn't work, we do etc. (determine alternatives).

15	Explain the environment, responsibilities--then get out of his (staff's) way.
19	Determine that memos written by either agency are acceptable to both through conference with other agency manager.

ENABLERS:

S	UV	
2	23	Skill in keeping them going when it got tough.
3	19	Sensitivity to needs of staff for support.

EM-39: Interagency Cooperation

STANDARDS:

No information collected under this heading.

TASKS:

NO	
05	Create a program data file for maintaining all data generated during instructional program development.
19	Make suggestions to program manager (other agency) on how his activities relate to this project.
19	Hold weekly lunches with other agency manager to discuss ways of dealing with problems jointly.
19	Translate jargon of experts into language understood by customer.
20	Precipitate meetings with sponsoring agency through contract manager.
20	Act as interagency gatekeeper--assemble all of the information relative to progress at one point; establish a communication center.
20	Inform about and involve sponsoring agency in only those items which promise greatest yield--process module, etc.
21	Maintain regular meetings with sponsoring agency.

ENABLERS:

S	UV	
1	10	Knowledge of interpersonal relations both within other agencies and between agencies.
2	12	Ability to insist that only the project manager makes commitments for project tasks.

3	16	Sensitivity to value conflict--start with assumption that contracting agency is hostile environment.
3	16	Sensitivity to modus operandi of contraction group--these people (military) have a working relationship with people which is an adversary kind of procedure.
3	02	Sensitivity to personal limitations--is all the conflict, strife, anguish really worth the effort.
3	13	Sensitivity to language problems--make sure that the interface between customer and expertise is done at one point; there is one communicator between agencies.
3	13	Sensitivity to need for gatekeeper between expert and customer, to avoid semantic misinterpretation previously settled by gatekeeper.
3	18	Sensitivity to problems of multiple bosses.

PM-40: Product Quality

STANDARDS:

J	LM	
1	12	Products of project meet performance criteria.
1	06	Product accepted by user.

TASKS:

NO	
06	Examine instructional material content for accuracy.
06	Examine processes of instructional unit for weaknesses which violate assumptions in estimating the effects of the unit.
06	Examine instructional materials format and processes for affective impact on students.
12	Restrict (critique) commentary of contracting agency to that relevant to content of material submitted and compatible with rest of curriculum.
14	Submit copy of completed material to contracting agency and ask for comments.
14	Resolve conflict of quality control standards between contractor and contractee on such factors as grammar, quality of visuals, etc.
14	Write out quality control procedures and provide quality control checklist to contracting agency.
14	Involve students in the decision process as third party mediator when other agencies are in conflict over quality control standards.
14	Examine instructional material content for continuity and unplanned or unnecessary redundancy.

14 Negotiate instructional materials performance criteria with respect to percent of students to succeed at what criteria level.
14 Direct revision of instructional units in accordance with need to strengthen various elements.
14 Specify weaknesses of instructional units to provide the basis for revision efforts.
21 Hold monthly meetings with head of contracting agency section to discuss quality control problems.

ENABLERS:

S	UV	
1	07	Knowledge of what contracts state as products required.
3	15	Sensitivity to realize that quality controls are negotiated standards.
3114		Sensitivity to the degrees of freedom within contractual obligations--how much variation we intend, how much they will allow.
3	01	Sensitivity to the point of extremity--where does one take a stand--where one feels the push is beyond the limits of contractual variance.
3	18	Sensitivity to being pushed into something you shouldn't be doing--going beyond contract.
3	02	Sensitivity to human limits--confirming the work to contractual task statements.
3	13	Sensitivity to language problems--making sure you and the customer do not have any semantic problems, schedule problems, or misunderstanding of task statement problems.
3	16	Sensitivity to attitude of taxpayers.
3	16	Sensitivity in quality control negotiations--to whether we have enough leverage to force our standard or whether it is really that important.

EM-41: Staff Hiring

STANDARDS:

J	LM	
2	20	The kinds of questions the person (candidate) asks are considered appropriate.
2	20	References indicate candidate works well with other people and he can learn.
2	20	Candidate is a rapid learner, knows the key questions, and doesn't waste my time.
2	14	Candidate impresses me favorably in comparison with my colleagues in previous situations.

TASKS:

NO	
11	Hire only those people you consider exceptionally good, generally with at least one specialty area.
11	Keep file of resumes and track good people in their careers--keep in touch at conferences, etc.
11	Pick up the phone and call everyone you know to advertise job opening and inquire about availability.

ENABLERS:

S	UV	
1	12	Knowledge of people who are in educational research and development business.
1	12	Knowledge of agencies that do educational research and development.
1	12	Knowledge of specialties of individuals.

EM-43: Intraagency Cooperation

STANDARDS:

J	LM	
1	22	Products of project meet performance criteria.
2	04	Products are produced and delivered on schedule.
2	13	Products are produced within budget.
2	05	Staff produces acceptable products as individuals and as a group.
2	25	Staff interacts as a group in a constructive manner and with mutual respect.
2	25	Staff views each individual member as being capable and competent in the performance of his tasks.
2	26	Staff reflects sense of values and priorities compatible with project objectives.
2	08	Staff reflects a faith in the judgment of project leadership.
2	27	Outcomes of decisions made in tense situations result in constructive activity following.

TASKS:

NO	
15	Convey to production staff that their biases and concerns are fairly represented in negotiating characteristics of a unit of instruction.
15	Assess productivity of project staff to support recommendations for salary increases.
19	Negotiate a viable philosophical basis for development of instructional materials between groups holding opposing value systems.
19	Attend meetings between agencies to annotate the relative positions of each regarding course development procedures.
19	Identify the nature of the differences of opinions between agencies relating to course development procedures.
19	Adapt course development procedures to reconcile differences of opinions coming from different value systems.
19	Stress to production staff that the focus is on end product in order to minimize "confrontation" aspects of review and refinement.
21	Confirm in writing agreements reached in interagency meetings which identify the next steps to be taken.
21	Confirm agreements reached in interagency meeting which describe the actions to be taken as a result of that meeting.

ENABLERS:

No information collected under this heading.

EM-44: Project Accountability

STANDARDS:

J	LM	
1	22	Products of project meet performance criteria.
2	04	Products are produced and delivered on schedule.
2	13	Products are produced within budget.

TASKS:

NO	
11	Estimate number of personnel required to deliver products within time frames available.
11	Interview applicants or desired persons with respect to project employment.

12 Determine budgetary allocations for salaries, materials, services, etc.

12 Determine the schedule of contracted delivery of products to consumer.

12 Determine time factors involved with review and refinement of instructional materials.

12 Making explicit what products must be produced.

13 Interview/check with potential consultants who might be able to produce critical products quickly.

20 Give agency rationale for moving course development staff to site to facilitate direct interaction with consumer.

ENABLERS:

No information collected under this heading.

Appendix C: Glossary of Abbreviations Used on Project

CAI	Computer-aided instruction: a type of module.
CBI70	A computerized film learning machine.
CMI	A facility in Iowa used for processing data.
CPT	Cumulative Post Test.
HMF	High Management Frequency.
HRDF	High Response-Demand Frequency.
IP	Intrinsically Programmed (module).
LAS	Learning Activity Summary.
LMF	Low Management Summary.
LRDF	Low Response-Demand Frequency.
medMF	Medium Management Frequency.
MF	Management Frequency: frequency within segment at which response causes management to vary stimuli fed to student.
PC	Progress Check.
RD	Response Demand: occasion when student is expected to respond to a question.
RDF	Response Demand Frequency: occurrence of response demands within a segment.
SC	Structural Communications: a type of module.
SME	Subject Matter Expert.

CASE PROFILE NO. 15

Written by
Herbert E. Hill

PROJECT TITLE: Study and Development of Automated Instructional-Materials-Handling Program

(AIMS Project)

AN EDUCATIONAL DEVELOPMENT PROJECT CONCERNED WITH: Developing a comprehensive automated system for handling information about instructional materials (book and nonbook) that meets the Los Angeles Unified School District needs and also serves as both a model and prototype system for large school districts throughout the country.

A PROJECT OF:
Los Angeles Unified School District
450 North Grand Street
Los Angeles, California 90012

This profile has been prepared according to

PROFILE FORMAT No. 1

Three profile formats are represented in this volume. The reader should refer to this number when making use of the reader's GUIDE to the profiles.

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Chapter I: Overview

The overview presents a brief synopsis of the AIMS Project as an introduction. This is elaborated by a discussion of objectives, rationale, and significance of the project and the context in which the project operates.

Synopsis of the Project

Title: Study and Development of Automated Instructional-Materials-Handling Program.

Responsible Institution: Los Angeles Unified School District (LAUSD).

Subcontractor: Systems Development Corporation (SDC).

Funding Sources:
1. U.S. Office of Education, National Center for Educational Research and Development.
2. Los Angeles Unified School District.

Funding Duration: March 15, 1970 to March 17, 1971. (12 months)

Observation Date: December 1970.

Present Stage of Development: Entering final third of project.

RDD&E Focus of Project: Educational development.

Focal Product: Design specifications and implementation plan for an automated instructional-materials-handling system.

Level of Funding and Duration: Medium-Low. (level 3 of 7 levels)

Agency Setting: Public school district (large metropolitan) and private industry.

Staff Summary (Current):

	Professional	Support
Total Full Time Equivalency (in man years):	3.85	1.00
Number of Personnel Assigned:		
Prime Contractor	3	1
Subcontractor	5	

Professional Specialities of Staff (interviewees only):
library science (3), information science (documentation), education, language, business administration, and advertising and marketing.

Objectives, Rationale, and Significance of the Project

The first goal of the Study and Development of Automated Instructional-Materials-Handling Program (AIMS) is to design an automated system for supplying selection, storing, distribution, purchasing, controlling, and evaluation information about instructional materials to meet the Los Angeles Unified School District's (LAUSD) needs for an integrated and efficient materials-handling program.

A second goal is "to plan and design the system in such a way that it can, with minor alterations, be readily adapted for use in other California school districts and in school districts in other Great Cities."[1]

To support these goals a comprehensive analysis of the systems and procedures in LAUSD, in other California city school districts, and in other Great Cities is being conducted to evaluate the systems in use and to assess the needs of the present and potential users of instructional materials.

Due to the great increase in the volume, diversity, and potential application of instructional materials, as well as the increased demand for them in school districts throughout the country, the problem of managing these materials has become critical. All of these materials must be selected, purchased, controlled, and evaluated. The diversity of these materials requires that each type receive some form of special treatment, while most of the management activities are similar and often quite repetitive. Consequently, to meet the increased demands for instructional materials of all types, school districts have allocated more of their financial and administrative resources to acquisition of these materials. The need for distribution of the materials and information about them has resulted in different systems, some sophisticated and others relatively crude [illegible]ing used for different types of materials. This diversity of ways in which they are acquired, stored, and disseminated has intensified the information management problem.

The basic problem to which this project addresses itself is "finding the most efficient, effective, nonredundant means for managing instructional materials in a manner that both satisfies their users and brings order to the management process. . ." (see Footnote 1).

This project's significance is in: (a) its attempt to design a comprehensive, automated system for providing essential management information (selection, purchasing, controlling, storing, distributing, and evaluating) on both book and nonbook[2] instructional materials for more efficient handling of information about such materials; (b) its attempt to design a prototype system that can be adapted for use throughout other school districts in the country.

---

[1] Cited from the subcontractor's Technical Support Proposal.

[2] Nonbook instructional materials vary from audio-visual tapes to frogs for science labs.

Each city and each school district has a unique system that reflects the problems indigenous to its local, State, and even regional setting. However, certain activities and requirements throughout the library and instructional materials service centers are similar and will benefit from the establishment of standard methods. This standardization could facilitate increased cooperative activities among school districts in exchanging acquisition and evaluation information, and perhaps even the materials themselves.[3]

Context in Which the Project Operates

Relationship to other agencies. Project AIMS resides in the Library Services section of LAUSD. The director of that section is also directing the project, assisted by LAUSD Library Services staff personnel, and a local Planning and Guidance Panel (PGP). The Library and Documentation Systems Department of the Public Systems Division of the Systems Development Corporation (SDC) is providing the technical support work for the project through a subcontract with LAUSD.

Liaison is maintained with a National Advisory Committee and a joint committee of the California State Library and Audio-Visual Association. The National Advisory Committee consists mostly of selected representatives from other Great Cities. PGP is made up of the Directors of Data Processing, Library Services (the Project Director), and Audio-Visual Services for the school district, along with other members of the school district staff. They monitor project progress to insure representation in the system under design. Liaison with the state and national committees is intended to insure the applicability of the system under design to school districts generally. Figure 1 illustrates these project contexts.

The project receives 86% of its total funding from the U.S. Office of Education (USOE) and 14% from state (California) sources.

Relationship to other efforts of an overall program. The project herein is the Phase I effort of a projected two-phase program of system design and implementation. The Phase II effort, when funded, will be the implementation of the information system in the Division of Special Services of LAUSD.

Supporting and technological resources. Technical skills vital to this project are being provided by the subcontractor. These skills are in the areas of information science and library systems, and application of systems analysis and design (specifically to automated library operations, as well as the whole range of instructional materials management).

Time lines. Work schedules and time lines for their accomplishment are relevant to subcontractor operations. Monitoring of this progress is done by prime contract personnel. Figure 2 illustrates the established time lines for the 10 most significant production tasks, as viewed by the project.

---

[3] This description is based on the subcontractor's Technical Support Proposal.

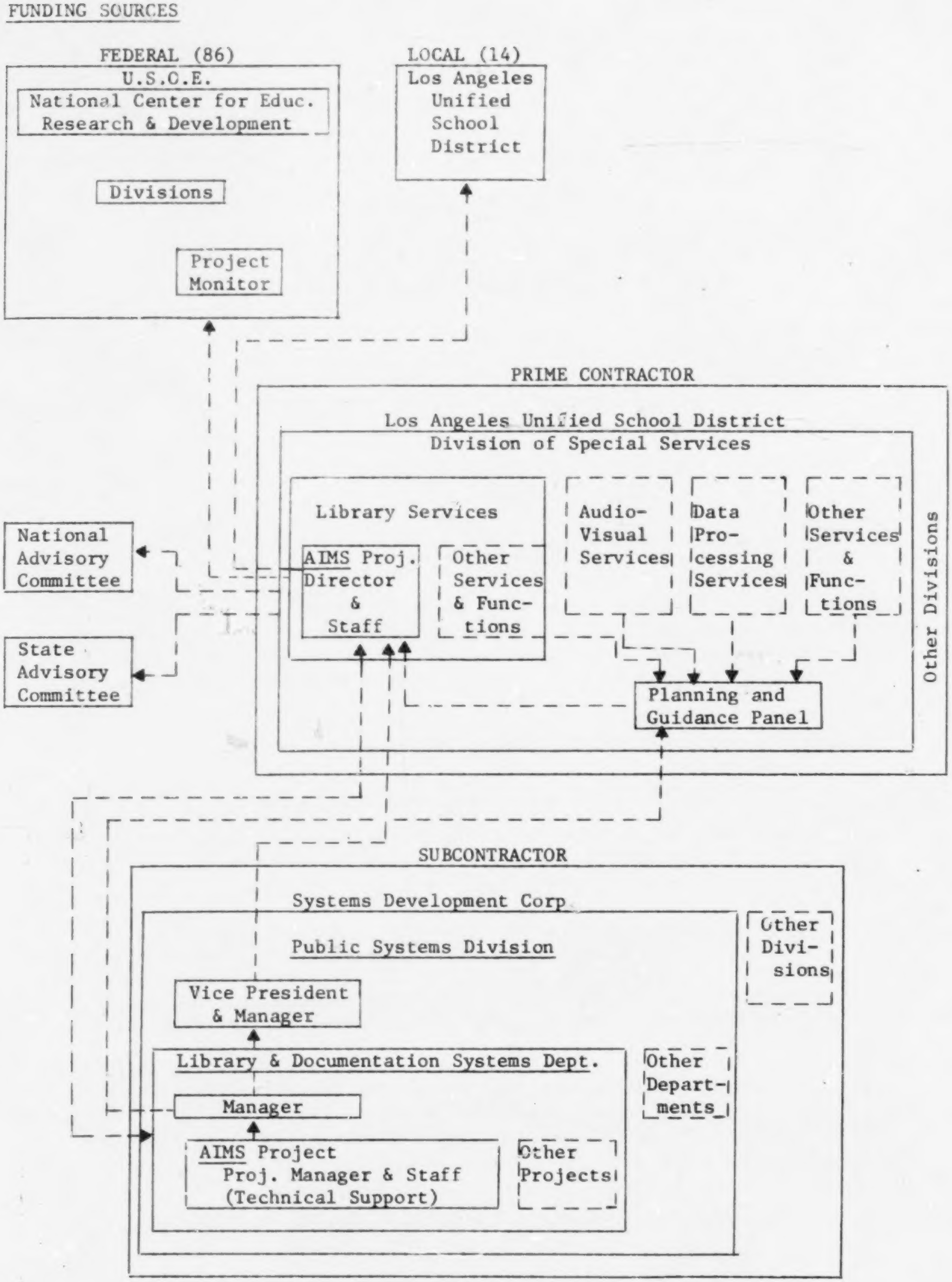

FUNDING SOURCES
FEDERAL (86)
U.S.O.E.
National Center for Educ. Research & Development
Divisions
Project Monitor
LOCAL (14)
Los Angeles Unified School District
PRIME CONTRACTOR
Los Angeles Unified School District
Division of Special Services
Library Services
AIMS Proj. Director & Staff
Other Services & Functions
Audio-Visual Services
Data Processing Services
Other Services & Functions
Other Divisions
Planning and Guidance Panel
National Advisory Committee
State Advisory Committee
SUBCONTRACTOR
Systems Development Corp
Public Systems Division
Vice President & Manager
Other Divisions
Library & Documentation Systems Dept.
Manager
Other Departments
AIMS Project Proj. Manager & Staff (Technical Support)
Other Projects

FIG. 1. Contextual map.

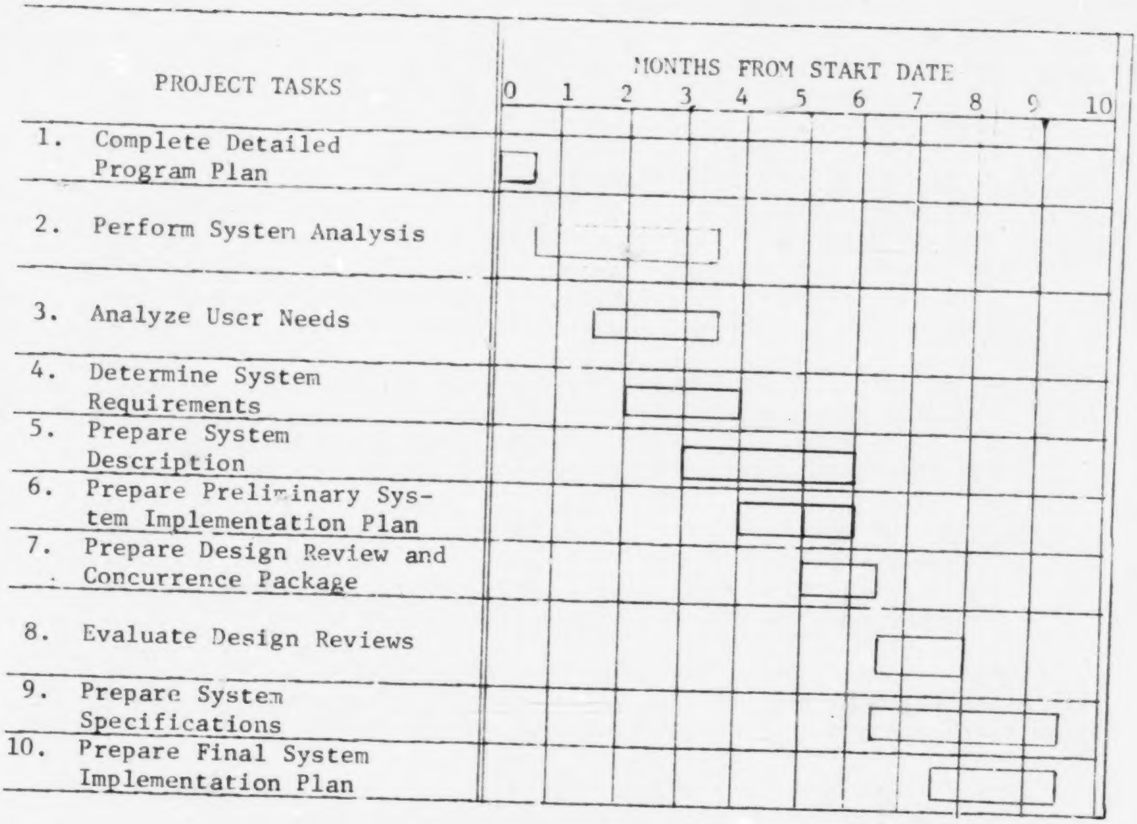


FIG. 2. Project time lines chart (for subcontractor).

Descriptions of the subcontractor's project tasks.

Task 1. Mutual understanding of project goals, reporting procedures, and liaison procedure between the subcontractor and the prime contractor were established. A PERT Chart, task chart, and work plan were developed. A list of other Great Cities and California districts were developed for site visits later in the project. This work resulted in a detailed project work plan document that was sent to PGP for review.

Task 2. Analysis of instructional materials (IM) handling practices in LAUSD, in two other Great Cities, and in selected California districts was conducted. Also, an analysis of the interfaces that existed within LAUSD and between the District, County, and State agencies with respect to instructional materials was done. Data for these analyses were collected by questionnaire and interview. In addition, a literature survey and its assessment were performed.

Task 3. Analysis of user needs was done in which classes of users and their needs were identified. Data were collected by questionnaire and interview with administrative librarians, teachers, and other relevant personnel in LAUSD, in other California school districts, and in other Great Cities.

Task 4. Using data from Tasks 2 and 3, the system requirements for instructional materials were determined in terms of types, volumes, and use patterns. The control, reporting, accounting, and other management requirements that the system must meet were indicated. This work resulted in a System Requirements Document that was sent to PGP for review. After review the document was finalized.

Task 5. Alternative system concepts were examined that met the system requirements developed in Task 4, to select the optimal concept or the best features of several concepts. A preliminary system description document was prepared and sent to PGP for review.

Task 6. System implementation tasks were defined and a tentative schedule developed. Also, preliminary cost estimates for implementation were developed. A preliminary system implementation plan document was prepared and sent to PGP for review.

Work on Tasks 5 and 6 was done nearly simultaneously. During the completing of these two tasks and starting Task 7, observation of this project was conducted by the interviewing team.

Task 7. Using the preliminary system description and the preliminary system implementation plan developed in Tasks 5 and 6, along with PGP reviews of those two documents, a design review and concurrence package was to be made up. This package would consist primarily of the system description, but without specific details applicable only to LAUSD. Other materials would include a checklist for use by the reviewers in evaluating the system design. Once prepared the package was to be distributed to the National Advisory Committee (their first work involvement in the project), the PGP, and others for review and evaluation.

Task 8. The reviews obtained from Task 7 are to be evaluated and incorporated in the system design where feasible. An informal report will be prepared and sent to PGP for review.

Task 9. Using the results of Tasks 5, 7, and 8 major subsystems of the overall system are to be defined and specifications for operations, software, and hardware are to be developed for each subsystem. Also, specifications for qualification testing of the system and its subsystems, and for documentation necessary, are to be developed. At this point briefings or information workshops will be conducted in other Great Cities and other school districts. Once the final systems specifications document is prepared it will be delivered to the prime contractor, making up one-half of the final documentation for the project.

Task 10. From the results of Task 6 and the reviews, a final system implementation plan is to be prepared that will include a detailed schedule, procedures for monitoring and improving system performance, and cost data for each step of implementation.

Also, two monthly status report letters are issued by the subcontractor project staff. One is internal, going to the department manager, and the other external, going to the Project Director in LAUSD. In addition, the subcontractor staff issues detailed technical progress reports quarterly. A progress report was issued from the office of the Project Director in LAUSD on October 1, 1970 with the next report to be submitted January 1, 1971.

Physical/environmental setting. The offices of both the prime contractor (LAUSD) and the subcontractor (SDC) are located in the Los Angeles area. The work of the project is being done there.

The contracting, managing, and coordinating activities of the project are being carried out in the Library Services Section of the Division of Special Services in the LAUSD, a public school setting. The technical support and production activities are being carried out in the Library and Documentation Systems Department of the Public Systems Division of SDC, a private research and information technology company.

Duration of this project was projected in the proposals as a 12 month effort, starting March 15, 1970 and ending March 16, 1971. However, due to circumstances, the work starting date was delayed until June 1. With the termination date remaining the same, the early stages of the work program were under time constraints.

Chapter II: Parameters of the Project

This chapter contains a description of project staffing and an indexing of identified project outcomes.

Project Structure

Staff structure. Figure 3 represents the organizational structure within this project.

The LAUSD Project Director, while indicating 10% of time allocated on project, is in continuing liaison with subcontractors, particularly at the upper management levels, with the National Advisory Committee members, and with the Project Monitor and members of PGP. While much of this liaison is concerned with topics other than Project AIMS, the frequency of this contact with the individuals concerned implies more actual time spent than the 10% allocation.

The National Advisory Committee overlaps in membership with a state joint committee of Library and Audio-Visual Association personnel. This provides a secondary advisory and dissemination platform for the AIMS Project.

The Deputy Director (and Project Monitor), as the single LAUSD full-time professional staff member of the prime contractor, provides the continuity in the various liaisons between all of the agencies, as well as the monitoring of all of the activities. For example, all contacts of the subcontractors with LAUSD personnel are arranged through the Project Monitor. All products from the subcontractor are routed through the Project Monitor to PGP.

The PGP represents the interests of various departments in the Special Services Division of LAUSD. They review and evaluate all the products of the subcontractor. Implementation of the system under design will directly affect their operations.

In the subcontractor's office, the manager of the department in which the project work is being done monitors the progress and serves informally as a consultant to his Project Manager. The Assistant Project Manager is the only full-time project member on the subcontractor staff. All other members of the staff are specialists that work on the project as needed.

Project roster. The following staff members (identified by job title) were currently on the project and were interviewed for information about the AIMS Project, and about selected products of the project with which each was associated. This is not a complete list of staff. The products and management outcomes interviewed around are identified in the column to the right. Some products or outcomes were interviewed around more than once, in each case with a different interviewee.

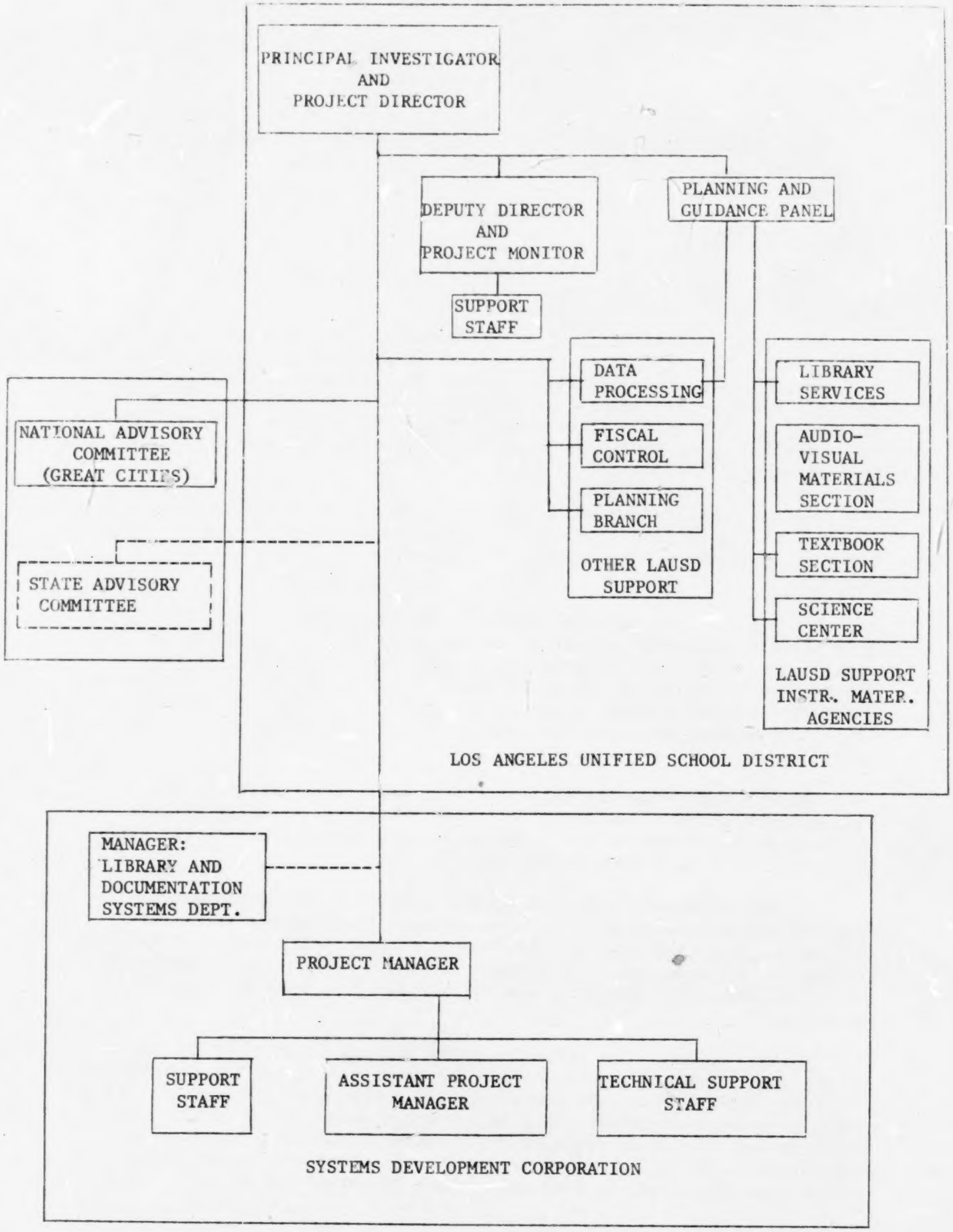

PRINCIPAL INVESTIGATOR AND PROJECT DIRECTOR
DEPUTY DIRECTOR AND PROJECT MONITOR
PLANNING AND GUIDANCE PANEL
SUPPORT STAFF
DATA PROCESSING
FISCAL CONTROL
PLANNING BRANCH
OTHER LAUSD SUPPORT
LIBRARY SERVICES
AUDIO-VISUAL MATERIALS SECTION
TEXTBOOK SECTION
SCIENCE CENTER
LAUSD SUPPORT INSTR. MATER. AGENCIES
NATIONAL ADVISORY COMMITTEE (GREAT CITIES)
STATE ADVISORY COMMITTEE
LOS ANGELES UNIFIED SCHOOL DISTRICT
MANAGER: LIBRARY AND DOCUMENTATION SYSTEMS DEPT.
PROJECT MANAGER
SUPPORT STAFF
ASSISTANT PROJECT MANAGER
TECHNICAL SUPPORT STAFF
SYSTEMS DEVELOPMENT CORPORATION

FIG. 3. Project organizational structure.

390

	Products and Management Outcomes Interviewed Around per Interviewee
Prime Contractor Personnel:	
Principal Investigator and Project Director: Responsible for the initiation, conduct, and final products of the AIMS project. At the time of observation FTE[4] assignment to AIMS was .10.	Staff - hiring. Budget. Project specifications. Staff - welfare. Adequate inter/intra-agency relationships. Project management decision structure.
Deputy Director and Project Monitor: Responsible for the coordination of the efforts of the LAUSD staff with the subcontractor staff, and for monitoring product quality. Is committed to the AIMS project throughout its duration, with FTE assignment of 1.00.	Quality control mechanism - schedule.
Planning and Guidance Panel Member: Director of Data Processing for LAUSD. Responsible for expressing needs of LAUSD and monitoring product quality and progress of project. While not assigned directly to the project, he participates approximately 10% of his time.	Proposal - LAUSD. System requirements document.
Subcontractor Personnel:	
Project Manager: Responsible for all subcontractor staff efforts on the AIMS Project throughout its duration, with FTE assignment of .50.	Staff - welfare. Staff - hiring. Budget. Adequate inter/intra-agency relationships. Monthly reports - subcontractor to prime contractor. Interview. Detailed project plan.

---

[4] FTE represents Full Time Equivalency, the percent of the individual's time that is allocated to this project.

Subcontractor Personnel: (Continued)	Products and Management Outcomes Interviewed Around per Interviewee
Assistant Project Manager: Responsible for assisting the Project Manager in managing the subcontractor staff efforts and working on assigned tasks. Is committed to the project throughout its duration, with FTE assignment of 1.00.	Questionnaire. Interview. Monthly report - subcontractor to prime contractor. Journal article.
Senior Systems Analyst: Responsibility to project for tasks in the development of final system requirements document, preliminary system implementation plan, and demonstration model of the system design. FTE assignment of .50 at the time of observation.	System requirements documents. Preliminary system description. Preliminary implementation plan.
System Testing and Library Systems Specialist: Responsible to project for tasks in system qualification test design, costing, and other system design tasks. FTE assignment of .50 at time of observation.	Cost estimates.
Senior Systems Analyst: Responsible to project for tasks involving audio-visual material system design, and other tasks where expertise is relevant. FTE assignment of .15 at time of observation.	Audio-visual system requirements. Bibliography. Interview.

The products and management outcomes above were identified from various sources, e.g., proposals, project reports, interviews, etc. From a total of 67 products and management outcomes identified, the eight AIMS Project staff members were interviewed around 13 products and nine management outcomes, or one-third of the 67 identified.

The following two sections of this chapter provide indexes of products and management outcomes, and interrelationship charts (product tree, management network) for the major products (or product groups) and major management outcomes. Chapters III and IV contain detailed descriptions of the operations (tasks) to accomplish each analyzed product or outcome, the enablers (knowledges, skills, sensitivities), and standards (criteria for adequacy).

Products Generated

Index of products. Table 1 is an indexing by level, and category within level where applicable, of all the identified products of Project AIMS. The index also indicates the products that are specific to project management, as well as those around which interviews were conducted.

Product tree. Figure 4 is a schematic of all the major products (Levels I, II, III) identified for this project. It attempts to show the hierarchical or interdependency relationships of the products as they serve the focal product (Level I). Looking at the figure from bottom to top represents the sequence of major products from the start of the project to its termination. The dotted line, slightly above center, represents the entrance of the interviewing team into this project for observation and interview purposes. Products listed below the dotted line were completed before the time of observation.

An important distinction is necessary at this point. If a product that is specific to project management was interviewed around from a production point of view, then that product will appear in Chapter III descriptions. If, however, that product was interviewed around from a management point of view, it will appear in the Chapter IV descriptions.

Management Responsibilities (Outcomes)

Index of management responsibilities. Table 2 is an indexing of all the identified management responsibilities (or outcomes) of Project AIMS by level, and category within level where applicable. The index also indicates the management outcomes interviewed around and contains products that are specific to management.

Management network. Figure 5 is a schematic of all the major (Levels I and III) management outcomes identified for this project, showing their hierarchical and interdependency relationships. Looking at the figure from bottom to top represents the sequence and interrelationships of the major management outcomes from initiation of the project to its termination. Outcomes around which interviews were conducted are referenced by an arbitrary identification number. Their detailed descriptions may be found in Chapter IV.

TABLE 1
Product Index

LEVEL I: FOCAL PRODUCT

Design specifications and implementation plan for an automated instructional-materials-handling system.

LEVEL II: TERMINAL PRODUCTS

Final system specifications.
Final system implementation plan.
Final system requirements document. (P-45)[a]

LEVEL III: INTERMEDIATE PRODUCTS

Reports
- Preliminary implementation system. (P-06)
- Design review and concurrence package.
- Design review informal report.
- User needs analysis documentation.

Specifications
- Systems analysis documentation.
- Preliminary system description. (P-49)
- System description.
- Preliminary system requirements document.

Procedures[b]
- *Detailed project plan. (PM-34)

LEVEL IV: FOUNDATIONAL PRODUCTS

Schedules
- Tentative implementation schedule.
- Detailed schedules for implementation plan.
- *Task chart.
- *PERT chart.

Evaluation Instruments
- Pilot system. (P-48)

Workshop
- Information workshop.

Data Collection Instruments
- Interview guide (LAUSD).
- Interview guide (other cities).
- Questionnaire. (P-27)
- Checklist.
- Interview (protocol). (P-36)

Procedures
- System qualification testing procedures.
- System implementation organization and procedures.
- System monitoring and improvement procedures.
- *Project work plan.
- *Project reporting procedures.
- *Coordination and liaison procedures between contractor and subcontractor.
- System design alternatives, evaluation procedures.

Reports
- Modified system design.
- LAUSD, IM-handling practices reports.
- Interface analysis report.
- IM-handling practices in other cities reports.
- Journal article. (P-52)
- *Monthly report - subcontractor to prime contractor. (EM-54)
- Two other cities site-visit reports.
- LAUSD site-visit reports.
- *Monthly report - internal subcontractor.
- Audio-visual system requirements. (P-71)
- Design review comments.
- Bibliography. (P-38)

Specifications
- Cost estimates for system. (P-03)
- Priorized list of major subsystems.
- Hardware requirements.
- Software design specifications
- System documentation specifications.
- Detailed task descriptions for implementation plan.
- Major cost categories for implementation plan.
- List of user classes.
- List of user needs.
- System design concepts.
- *List of other cities and school districts for visits.
- Proposal - prime contractor. (P-25)
- Proposal - subcontractor.

---

[a] Products around which interviews were conducted. The number following the item is an arbitrary product identification number, and is used in identifying products for description in Chapter III.

[b] Asterisk indicates products specific to project management. These products appear again in the management responsibility index, Table 2.

TABLE 2

Responsibility Index

LEVEL I: FOCAL OUTCOME

Sponsor-accepted automated instructional-materials-handling system design specifications and implementation plan.

LEVEL III: INTERMEDIATE OUTCOMES

Production Management	Environmental Management
Manage production of documents. (PM-65)[a]	Staff - hiring. (EM-57)
Product specifications. (PM-59)	Budget. (EM-58)
Quality control mechanism - schedules. (PM-63)	Staff - welfare. (EM-60)
Staff - work scheduling. (PM-67)	Adequate inter/intra-agency relationships. (EM-61)
*Detailed project plan.[b]	Project management decision structure. (EM-62)
	Maintained philosophy of approach to problem.

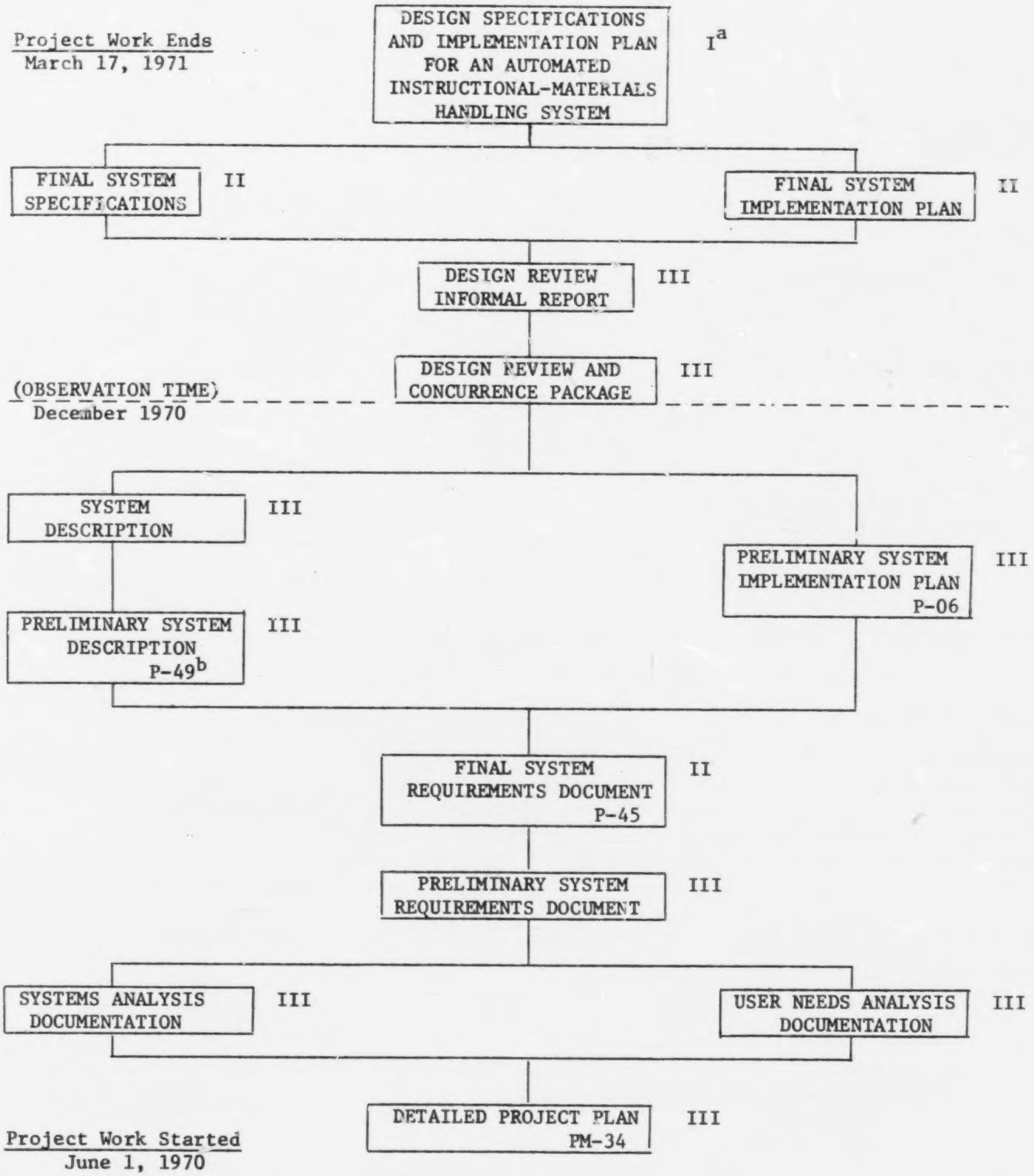
LEVEL IV: FOUNDATIONAL OUTCOMES

Production Management	Environmental Management
*Task chart.	*Project reporting procedures.
*PERT chart.	*Coordination and liaison procedures between prime and subcontractor
*Work plan.	*Monthly report - subcontractor to prime contractor.
*List of other cities and school districts for visits.	*Monthly report - internal subcontractor.

---

[a] Management outcomes (and products that are specific to management) around which interviews were conducted. The number following the item is an arbitrary identification number, and is used in identifying outcomes and products for description in Chapter IV.

[b] Asterisk indicates products specific to project management (also appearing in Table 1).


Project Work Ends
March 17, 1971
DESIGN SPECIFICATIONS AND IMPLEMENTATION PLAN FOR AN AUTOMATED INSTRUCTIONAL-MATERIALS HANDLING SYSTEM
I[a]
FINAL SYSTEM SPECIFICATIONS
II
FINAL SYSTEM IMPLEMENTATION PLAN
II
DESIGN REVIEW INFORMAL REPORT
III
DESIGN REVIEW AND CONCURRENCE PACKAGE
III
(OBSERVATION TIME)
December 1970
SYSTEM DESCRIPTION
III
PRELIMINARY SYSTEM IMPLEMENTATION PLAN P-06
III
PRELIMINARY SYSTEM DESCRIPTION P-49[b]
III
FINAL SYSTEM REQUIREMENTS DOCUMENT P-45
II
PRELIMINARY SYSTEM REQUIREMENTS DOCUMENT
III
SYSTEMS ANALYSIS DOCUMENTATION
III
USER NEEDS ANALYSIS DOCUMENTATION
III
DETAILED PROJECT PLAN PM-34
III
Project Work Started
June 1, 1970

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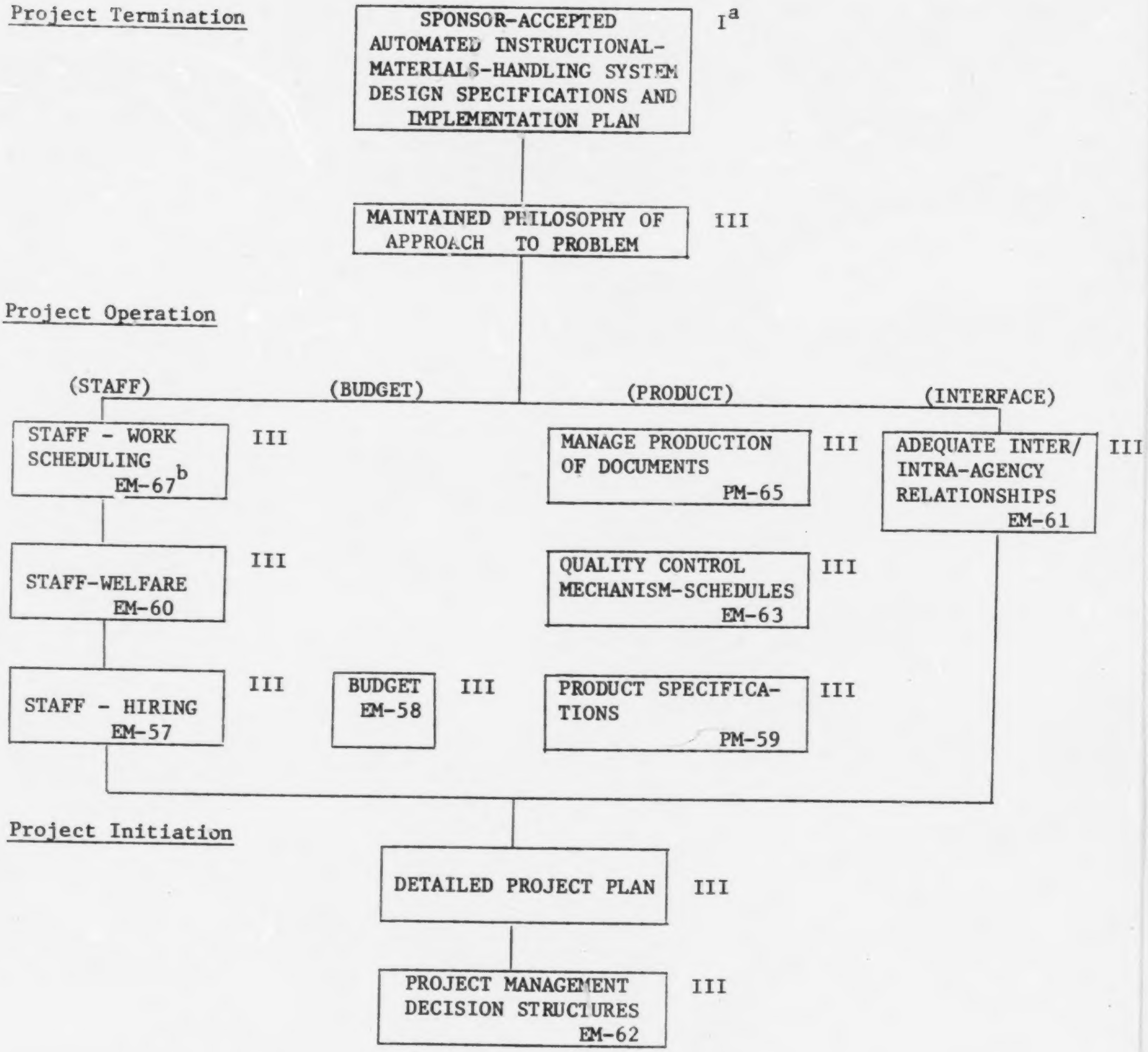
[a] Indicates the product level (see Table 1).

[b] Products around which interviews were conducted are followed by their identification number.

FIG. 4. Product tree.


Project Termination
SPONSOR-ACCEPTED AUTOMATED INSTRUCTIONAL-MATERIALS-HANDLING SYSTEM DESIGN SPECIFICATIONS AND IMPLEMENTATION PLAN
I[a]
MAINTAINED PHILOSOPHY OF APPROACH TO PROBLEM
III
Project Operation
(STAFF)
(BUDGET)
(PRODUCT)
(INTERFACE)
STAFF - WORK SCHEDULING EM-67[b]
III
MANAGE PRODUCTION OF DOCUMENTS PM-65
III
ADEQUATE INTER/INTRA-AGENCY RELATIONSHIPS EM-61
III
STAFF-WELFARE EM-60
III
QUALITY CONTROL MECHANISM-SCHEDULES EM-63
III
STAFF - HIRING EM-57
III
BUDGET EM-58
III
PRODUCT SPECIFICATIONS PM-59
III
Project Initiation
DETAILED PROJECT PLAN
III
PROJECT MANAGEMENT DECISION STRUCTURES EM-62
III

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[a] Indicates the management outcome level (see Table 2).

[b] Outcomes and responsibilities around which interviews were conducted are followed by their identification number.

FIG. 5. Management network.

Chapter III: Details on Each Product Development

This chapter contains (a) a listing of all the standards, tasks, and enablers identified during interviews around each interviewed product; (b) summaries of citation within each category of standards, tasks, and enablers; and (c) the relationships of standard, task, and enabler categories to product categories in terms of frequency. Details on management responsibilities will be detailed in the next chapter.

Listing of Product Standards, Tasks, and Enablers

Each product heading is followed by a brief annotation containing: (a) whether the product was completed or uncompleted at time of observation and if completed, how recently; (b) a description of the product; (c) the level (foundational, intermediate, terminal, focal) of the product; and (d) the significant relationship(s) with other products of the project.

Following the annotation, the work focus of the interviewee to the product will be identified, i.e., whether it was product production or production management.

Then standards, tasks, and enablers appear under their separate subheadings to identify:

1. The standards by which the product is judged or controlled.

2. The tasks involved in generating the product.

3. The enablers necessary for generating the product, stated in the form of (a) knowledges, (b) skills, and (c) sensitivities to be possessed by project personnel.

P-03: Cost Estimates for System

This product had been completed a short time before the period of observation. It was a working report of the rough estimates of the cost of developing and installing each component subsystem, for planning, and for indicating the costs projected for the complete system. This is a Level IV (foundational) product. This product was developed as a part of the Preliminary System Implementation Plan (P-06) and was included in that document.

Work Focus of the Interviewee to This Product:

This product was interviewed around once. The interviewee produced the product.

Product Standards:

1. Cost estimates provide accurate basis against which potential user of the system can make decisions about implementation and use.
2. Cost estimates accurately reflect current costs of time, personnel, and equipment.
3. How closely cost estimates for implementation of automated information-processing system under design match with previous guesstimates by experts.

Production Tasks:

1. List components of automated information-processing system under design.
2. Prioritize list of automated information-processing system components under design.
3. Specify order of implementation of each component of the automated information-processing system, based on the prioritized list of components.
4. Estimate amount of time needed to implement each component of the system under design.
5. Estimate manpower needs of implementation per system component.
6. Estimate equipment needs of implementation per system component.
7. Prepare written report of cost estimates for implementation of automated information-processing system.
8. Estimate manpower costs per system component.
9. Estimate equipment costs per system component.

Enablers of Production:

1. Knowledge of what parts of an information-processing system are done by clerical people.
2. Knowledge of how data conversion is done in information processing.
3. Knowledge of how much time is required to write and develop a computer program.
4. Knowledge of personnel types required in a functioning automated information system.
5. Ability to estimate automated information-processing system's programming costs.
6. Ability to observe a process and identify its component parts and the inputs and outputs of those parts.

P-06: Preliminary System Implementation Plan

This product was completed just as observation began. It was an informal report of tasks necessary to implement the system, a tentative schedule, and the cost estimates. This is a Level III (intermediate) product. It was produced by the subcontractor and sent to the prime contractor for review. After review, the product fed into the Design Review and Concurrence Package.

Work Focus of the Interviewee to This Product:

This product was interviewed around once. The interviewee helped (team effort) produce the product.

Product Standards:

1. Workability of the implementation plan.

Production Tasks:

1. Utilize other previous project resources and documents.
2. Exchange information with project staff to come to a decision for each requirement of the system.
3. Provide an explanation of what a system implementation plan is.
4. Formulate a set of questions that could be applied/asked relative to general considerations or functions of the system.
5. Provide a description of the characteristics of the general considerations to be dealt with relative to specific problem areas or specific functions in the system.

Enablers of Production:

1. Know some of the procedures of non-math operations research.
2. Know the kind of questions to ask relative to determining general considerations and specific functions of the plan.
3. Know how to do a cost-benefit analysis.
4. Know how to do a trade-off study.
5. Skill in developing a system implementation plan--which comes from experience in preparing such plans.
6. Skill in reducing data or information to a simple statement.
7. Ability to make qualitative decisions.
8. Ability to think logically--as to component elements within the implementation plan.

P-25: Proposal-LAUSD (Prime Contractor)

Through this product the project was successfully funded. It contained the specifications for the proposed study (the AIMS Project). This is a Level IV (foundational) product.

Work Focus of the Interviewee to This Product:

This product was interviewed around once. The interviewee helped produce the product.

Product Standards:

1. Satisfaction of funding agency.
2. It makes good sense to me. (Relates to Tasks 2 and 5.)

Production Tasks:

1. Determine just what activities were taking place with respect to the problem.
2. Estimate the scope of change required with respect to existing system.
3. Plan to modify existing system rather than imposing new structure on old.
4. Exchange ideas with others in the planning group.
5. Estimate if specifications are general and/or flexible enough for use in other cities.

Enablers of Production:

1. Knowledge of current methods of instructional-materials-handling operations.
2. Knowledge of the design and service of existing materials handling systems.
3. Knowledge of how instructional materials inventory system relates to the physical accounting system.
4. Skill in identifying clear expression from a neutral, unbiased viewpoint.
5. Skill in differentiating logical from illogical sequences.
6. Sensitivity to need to solve problems rather than create system for system's sake.
7. Sensitivity to the basic problems of students and instructors with respect to material needs.

P-27: Questionnaire

This product had been completed for some time at the time of observation. It was a form, used only in LAUSD, requesting information about instructional-materials-handling practices in each of the instructional-materials agencies. It was mailed to the agency heads and the information was used preparatory to later site visits. This is a Level IV (foundational) product. It was initially developed in the Detailed Project Plan effort and fed into both User Needs Analysis Documentation and Systems Analysis Documentation.

Work Focus of the Interviewee to This Product:

This product was interviewed around once. The interviewee helped (group effort-staff meeting) produce the product.

Product Standards:

1. The questionnaire gets the information necessary to do the tasks specified in the subcontractor's proposal.
2. The questionnaire contained questions that asked for information that could be responded to without excessive delay.
3. It did not include questions that would best be answered in interviews.
4. Keep the questionnaire as brief and easy to fill out as information needs permit.
5. It would produce the detail of information needed, e.g., in terms of numbers and people.

Production Tasks:

1. Decide (staff, in group) what information was needed to design the system.
2. Write (staff, in group) in outline, what information items were needed to design the system.
3. Refine (staff, in group) list of information items that was needed.
4. Brainstorm (staff, in group) all the details of the system design phase that would have to be accommodated.
5. Review (staff, in group) the subcontractor's proposal to identify what questionnaire should cover.
6. Decide (staff, in group) what information could be better gotten by questionnaire than interview.
7. Decide (staff, in group) on degree of structuredness or open-endedness of questions to elicit information needed.

Enablers of Production:

1. Knowledge of what kinds of questions to ask to solve design needs, such as size of effort, kinds of tasks, number of people.
2. Knowledge of information processing.
3. Able to prepare a questionnaire to elicit from the respondent the information required.
4. Skill in working in a group--able to listen to other people, make some suggestions, then work to agreement.
5. Able to design a question that is not too restrictive or too open-ended for the respondent.
6. Sensitive to what other people have to say in a group session.

P-34: Detailed Project Plan

This product had been completed for some time at the time of observation. It was an informal report from the subcontractor to the prime contractor for review. It included a PERT chart, list of other cities and school districts for visits, project reporting procedures, coordination and liaison procedures between prime and subcontractors, task chart, interview guide, and questionnaire. This is a Level III (intermediate) product. This product was developed from reviews of the proposals (prime and subcontract), and from meetings between the two agencies. After the document was reviewed and formalized it provided the framework in which the project work was carried out and fed directly into the Systems Analysis Documentation and the User Needs Analysis Documentation.

Work Focus of the Interviewee to This Product:

This product was interviewed around once. The interviewee produced the product.

Product Standards:

No information collected under the heading.

Production Tasks:

1. Review proposal to break out work units.

2. Allocate/determine manpower needed to carry out tasks.
3. Determine a work schedule for the project.
4. Divide work up into tasks relative to the project.
5. Determine the nature of products that are produced.

Enablers of Production:

1. Know the capabilities of your staff.
2. Ability to estimate time relative to a particular task--based on experience.
3. Awareness of the magnitude of the work on the project.

P-36: Interview (Protocol)

The interviews in all settings (LAUSD, other California city school districts, other Great Cities school districts) had been completed for some time at the time of observation. The interviews were conducted to collect data on instructional-materials systems in all the settings cited above. Where appropriate an interview guide was used. This is a Level IV (foundational) product. This product produced data essential to the Systems Analysis Documentation and somewhat essential to the User Needs Analysis Documentation.

Work Focus of the Interviewees to This Product:

The product was interviewed around three times. The interviewees helped (team effort) produce the product.

Product Standards:

1. An interview was terminated when it stopped producing any new information as judged by the interviewer.
2. An interview guide did assure that the interviews produced at least a minimum amount of information.
3. Points in the outline or interview guide have been covered.
4. System analysis interview provides information about what is input and output, form of input and output, actual frequency of output, desired frequency of output, channels through which information passes.

Production Tasks:

1. Conduct formal interviews with metropolitan school district personnel using an interview guide.
2. Conduct informal but focused interviews (e.g., over lunch or drink), probing instructional-materials-handling practices.
3. Write inhouse memo for project staff describing problems and processes of instructional-materials-handling in metropolitan school districts relating them to local effort.
4. Reference interview data against needs stated in proposal.
5. Question school personnel using an interview guide.
6. Make notes during interview of relevant information.
7. Write report (inhouse memo) and distribute to other project staff.
8. Agree (project staff) before doing interviews to a set of data the interviews should produce.
9. Ask questions relative to the operation of an instuctional-materials center and/or an audio-visual center.
10. Take notes during the interview.
11. Tape record the interview.
12. Acquire any products the agency is able to give away.
13. Digest the information to translate it into the System Requirements Document.

Enablers of Production:

1. Know what a "typical" school district operation is, relative to instructional materials.
2. Knowledge of instructional materials used in schools.
3. Knowledge of library practices in handling instructional materials.
4. Able to spot differences of operation and organizational structure among school districts relative to the handling of instructional materials.
5. Able to extract information one is after from an interviewee.
6. Able to conduct effective interview by keeping interviewee focused on subject interviewer is interested in.
7. Able to gather information in an informal interview over a lunch or drink.
8. Able to extract from people what you need to know, keep interview focused.
9. Able to establish some rapport with the interviewee.
10. Sensitivity to the fact that some questions may be meaningless or not polite to ask, based on responses to other questions.
11. Sensitive to keeping an interview focused without antagonizing interviewee.
12. An interest in and tolerance for people and their problems.

P-38: Bibliography

This product had been completed for some time at the time of observation. It was an inhouse, working bibliography from a survey of the information-science literature for the past five years (1965-70), looking for new and innovative approaches to the whole area of information handling systems at the noncollege level. This is a Level IV (foundational) product. This product was developed in the systems analysis effort and included in the Systems Analysis Documentation. It fed into both Preliminary and Final System Requirements Documents (P-45) and then into the Preliminary System Description (P-49).

Work Focus of the Interviewee to This Product:

This product was interviewed around one time. The interviewee produced the product.

Product Standards:

1. The bibliography represented an estimated 60 to 70 percent of the relevant information-science literature published from 1965 to 1970.
2. Cost-benefit ratios in producing the bibliography are maximized in terms of time spent.

Production Tasks:

1. Scan indexes and guides to periodic information-science literature in library.
2. Identify titles of materials and articles that may have relevant information to area of information handling systems at the noncollege level.
3. Locate articles and materials of interest on library shelves.
4. Skim articles and materials for relevance of content to information need and salient details.
5. Talk with experts in information science to locate additional sources of relevant information.
6. Write on cards salient details from each of the relevant articles or materials located.

Enablers of Production:

1. Knowledge of information science and, in this case, knowledge

of audio-visual dissemination systems.
2. Able to do basic library/literature research tasks, i.e., using literature indexes and guides.
3. Able to use time in library effectively with high information output per given amount of time spent.

P-45: Final System Requirements Document

This product had been completed for some time at the time of observation. It was a formal report of the requirements the system under design would have to meet in terms of instructional-materials type volumes and use patterns. Included were the control, reporting, accounting, and other management requirements the system would have to accommodate. This is a Level II (terminal) product. This product was the finalized version of the requirements based on the Preliminary System Requirements Document and the LAUSD review of that document submitted by SDC. This product provided the basis for the development of both the Preliminary System Description (P-49) and the Preliminary System Implementation Plan (P-06).

Work Focus of the Interviewee to This Product:

This product was interviewed around once. The interviewee helped (team effort) produce the product and also managed the production. The focus here is both product production and production management.

Product Standards:

1. Parallelism in terms of the organized structure of content within the document.
2. Degree of specificity--was it too/not specific enough to be effective?
3. Lack of inconsistencies in the content.
4. Positive feedback from uninvolved party, i.e., not an author.
5. Positive feedback/reactions from recipient/user agency.
6. Time--in terms of the bands of time established in conjunction to the "clip-level"--acceptable quality within time frame.
7. Type print--determine whether or not there are light hits (type) that will fade out.
8. Type will reproduce clearly on final copy.

9. Correction marks will not reproduce on final copy.
10. There is continuity and flow in terms of the language.
11. There are reader guidelines or page headings on each page.
12. Positive feedback from reviews by people internal and external to the project.
13. Compare, by reading, what you want to say to what you have written.
14. A feeling that says: "I am comfortable in letting someone else review/read what I have written."
15. Could no longer think of content or format that should be expanded or changed.

Production Tasks:

1. Review survey reports and previously written project materials.
2. Talk to other staff members for input information.
3. Establish a format for the document.
4. Provide a description for each subparagraph as to content.
5. Establish a "clip-level" (tolerance level) for exactness of language, completeness of material in terms of time and resources available.
6. Set up mechanical (typing, spacing) requirements with the typing pool.
7. Determine the system requirements in terms of format and technical logic so that each section is consistent with other sections of the document.
8. Prepare a table of contents for the document.
9. Prepare an outline of the document.
10. Insure language level is suitable for the reader/user--minimum jargon.
11. Proofread the copy--in terms of content and mechanics.
12. Evaluate or verify system limits (quantity/input) as to reasonableness, meaningfulness, consistency.
13. Review document for accuracy, completeness, internal consistency.
14. Modify or add to rough draft sections of the document.

Production Management Tasks:

1. Work out a production schedule.
2. Insure/monitor the production schedule.
3. Arrange to get report cover reproduced.
4. Arrange to have document reviewed by the Division Editor.
5. Arrange to have document duplicated.
6. Needle writers to insure sections of the document are written on time.

Enablers of Production and Production Management:

1. Knowledge of what technical writing/communication is.
2. Knowledge of coherence, unity, clarity rules for writing.
3. Knowledge of the required level of detail in the document.
4. Know the requirements of typography.
5. Know how the agency typists work.
6. Know the subdivisions of the document so can break out production chunks.
7. Know the length of time it takes to type the document.
8. Know how long it takes to proofread and make corrections.
9. Know the length of time it takes to reproduce needed copies of the document.
10. Know what kinds of resources are available--typists.
11. Know something about the temperament of the support people.
12. Know the production status of each piece of the document.
13. Knowledge of how systems, in general, work.
14. Know the purpose of the document.
15. Know the concept of what is to result or evolve from the document.
16. Ability to shift points of view, i.e., author to reader.
17. Understanding of what the author is trying to accomplish or say so you won't change his material because you might have said it differently.
18. Application of rules of coherence, unity, clarity.
19. Ability to recognize/judge a reasonable amount of coverage to the material.
20. Ability to quickly extract essential information from previously written materials.
21. Ability to express or transfer thoughts in writing.
22. Ability to think logically.
23. Aware of the corporate image or style of writing or publication.

P-48: Pilot System

This product was completed just prior to the time of observation. However, some additional work was being done during the observation time to prepare the pilot system for a demonstration. The pilot system is a file management system used as a simulation of the system under design for testing and developing operational standards. This is a Level IV (foundational) product. The pilot system was developed along with the designing of the system. It feeds into the Preliminary System Description (P-49) primarily, but also feeds into the Preliminary System Implementation Plan (P-06).

Work Focus of the Interviewee to This Product:

This product was interviewed around once. The interviewee produced the product.

Product Standards:

No information collected under this heading.

Production Tasks:

1. Review Requirements Document to determine how closely it could be simulated (information blocks and combinations thereof).
2. Read materials relative to file management system DS2.
3. Talk to technical people responsible for file management system to gather information about the system.
4. Analyze catalogs and available materials relative to school district instructional materials.
5. Establish categories of information to go into the model system.
6. Determine if categories of information can be recreated and combined.
7. Analyze existing format and elements in the catalog to determine different kinds of instructional materials within a district.
8. Determine process requirements of a file management system.
9. Determine minimum amount of data required to test the system.
10. Work backwards from a successful run of the data and list where to put data from the punched cards.

Enablers of Production:

1. Know the System Requirements Document--its content.
2. Know the purpose of the demonstration model.
3. Know the output requirements.
4. Know information retrieval systems--capabilities and how some of them work.
5. Know what a file management system is--capabilities and how it works.
6. Know about data entry--how it works.
7. Know how fixed-format blocked records are utilized.
8. Ability to design report formats--being able to extract information contained within a simulation model and translate into a meaningful package format.
9. Ability to design a file management system.

10. Ability to design a computer based system with a capability of a lot of information and output components.
11. Ability to interpret specifications.
12. Ability to translate/change existing information into another structure.
13. Willingness to experiment and hypothesize.

P-49: Preliminary System Description

This product was completed just prior to the time of observation. It was an informal report to the prime contractor (from the subcontractor) of the system design, including functional flow diagrams, hardware, software, procedural requirements, input/output (I/O) devices and file structures, requirements for personnel and their training, and system qualification testing procedures. This is a Level III (intermediate) product. The primary input to this product was from the Final System Requirements Document (P-45). After review by the prime contractor, the product feeds into the Design Review and Concurrence Package making up most of that document.

Work Focus of the Interviewee to This Product:

This product was interviewed around once. The interviewee helped (team effort) produce the product and also helped (team effort) manage the production of the product. The focus here is both product production and production management.

Product Standards:

1. Use of flow charts reveals consistencies in logic of the description.
2. Everything has been included; it is complete in terms of what is written.
3. Material actually says what I think it should.
4. There are internal consistencies/logic within the document.
5. Compared with System Requirements Document all the requirements have been covered and haven't introduced something that isn't required.
6. Positive feedback from the project staff.

Production Tasks:

1. Exchange information and interact with project staff.
2. Read basic project materials--interview reports, summaries of meetings, status reports, documents--to gather information.
3. Develop alternatives in terms of the contents of files.
4. Describe how the design of the system is to work.
5. Make a list of items of interest to a particular function relative to establishing contents of files.
6. Write materials, set aside, come back and work on them again (called germination).
7. Read through materials quickly for a gross understanding.
8. Reread in detail to make notations and corrections.
9. If a point is misunderstood, ask the author for clarification.
10. Critique writing to ensure consistency in point of view/ writing style in the document.

Production Management Tasks:

1. Establish a production schedule.
2. Allocate work units/tasks.
3. Monitor the progress of document production.
4. Provide "stimuli" to see that writers and support staff completed their tasks on time.

Enablers of Production and Production Management:

1. Know what a system description does--its purpose.
2. Know what a system design is.
3. Understand what input/output requirements are.
4. Knowledge of data processing techniques.
5. Knowledge of data preparation techniques/methods.
6. Know the purpose of the document-situation specific.
7. Ability to comprehend the logic expounded in the components of the documents.
8. Ability to comprehend the utility of the materials in the document.
9. Ability to detect gaps or vacancies in the document and its components.
10. Awareness of the techniques, technology, and development in methodology that will impact upon your system within the next 5-10 years--don't build an obsolete system.
11. Understand the flow or working of the system itself.
12. Sensitivity to the fear of change that exists in people.
13. Awareness that one cannot dictate to people.

P-52: Journal Article

At the time of observation, this product was not completed, but work on it was to begin soon. The article, when completed, was intended for a professional library journal and would describe the system under design and its purposes. This is a Level IV (foundational) product. This product is primarily a limited-audience information dissemination effort. In content it will rely heavily on the Preliminary System Description document (P-49).

Work Focus of the Interviewee to This Product:

This product was interviewed around once. The interviewee would produce the product.

Product Standards:

1. Article length within limits estimated from journal review.
2. Level of detail (technical level) not beyond assessment of audience skill level and interest.
3. Other project staff members judgment of accuracy of description of AIMS Project and its goals.

Production Tasks:

1. Review journal for which article intended.
2. Assess who is audience from journal review.
3. Outline the article into its key points.
4. Decide article length from journal review.
5. Decide technical level from assessment of audiences (skill level and interest).
6. Write rough draft using typewriter.
7. Have other staff members review and edit rough draft.
8. Write final draft using staff reviews.

Enablers of Production:

1. Thorough knowledge of English and English grammar.
2. Some knowledge of information processing in library systems.
3. Able to use the language to communicate clearly.
4. Able to put yourself in the place of the reader by your imagination.

5. Sensitive to what you anticipate the audience will be interested in knowing, their problems, and their skill level in using automated information-handling systems.

PM-54: Monthly Report (Subcontractor to Prime Contractor)

This product is a technical progress report issued monthly to the prime contractor. It is a summary of the major activities in the subcontractor's offices covering from the 15th to the 15th of each month. This is a Level IV (foundational) product. This is an information-giving product for management and coordination purposes and not related to other products of the project in a production sense.

Work Focus of the Interviewees to This Product:

This product was interviewed around twice. One interviewee produced the product. Another was concerned with production management.

Product Standards:

1. Report doesn't exceed a length of one and one-half pages.
2. Report covers, in summary, the significant activities of the subcontractor staff as confirmed by the Project Manager in that staff.
3. Positive feedback from the customer relative to the report content.
4. Positive feedback from the department manager.
5. No misinterpretations in the report noted in customer feedback
6. Sense of satisfaction that report is complete.
7. All material that is important or necessary has been included in the report.
8. Problems have been resolved--in relation to the content of report.
9. Material in document is interrelated and fits together.

Production Tasks:

1. Review what subcontractor staff has done or written during time since last report.

2. Review work schedule for project.
3. Review last report to determine what that report had covered.
4. Prepare outline of major accomplishments and activities, including important meetings that occurred in relevant time period.
5. Write the rough draft of the report using a typewriter.
6. Have subcontractor Project Manager edit the report rough draft.
7. Using editorial comments, finalize the report and have retyped by secretary.
8. Send finalized copy of report to prime contractor Project Monitor.
9. Use an earlier report as a guide.

Production Management Tasks:

1. Isolate main efforts of report period.
2. Describe main efforts of report period.
3. Insure coverage in report in terms of what is outlined in proposal.
4. See that mechanical/production steps to produce the report copies are carried out in time.
5. Insure that writer gets input information (primarily from the project staff) for the report.
6. Reread proposal to insure necessary points have been covered in the report.
7. Read entire report to insure completeness.

Enablers of Production and Production Management:

1. Some knowledge of information retrieval in computerized information-handling systems.
2. Able to identify the major activities of the reporting period.
3. Able to summarize the activities in a concise written form.
4. Able to decide the amount of detail reported in terms of the limited lengths specified for the report.
5. Technical knowledge of content which is the substance of the report.
6. Ability to construct an informative and succinct report.
7. Technical skill to spot things that are not well explicated.
8. Able to keep total picture of project in order to fit together the pieces of the report.
9. Able to describe/divide system in a logical manner.

P-71: Audio-Visual Instructional Materials System Requirements

This product had been completed for some time at the time of observation. It was an inhouse, working report of the special constraints unique to films and other nonbook materials that the system design would have to accommodate. It also listed ways the system could be designed to meet those constraints. This is a Level IV (foundational) product. This product developed out of the Systems Analysis Documentation and the User Needs Analysis Documentation and fed into both Preliminary and Final System Requirements Documents (P-45).

Work Focus of the Interviewee to This Product:

This product was interviewed around once. The interviewee produced the product.

Product Standards:

1. The requirements are acceptable when the components and functions of an audio-visual system are clearly specified.
2. The requirements must state the maximum flow, in terms of volume and frequency, the system can handle.
3. The requirements for the system as stated in the report meet the standards (philosophy) of the Project Manager.

Production Tasks:

1. Identify the essential components for a functioning audio-visual (A-V) materials dissemination system.
2. List ways components of a functional A-V materials dissemination system can be designed.
3. Write design requirements of a proposed system to allow maximum information flow in terms of volume and frequency.
4. Draw a flow-chart of the proposed system.
5. Specify what happens to each form of output--where it goes next in the system.
6. Interface with other project staff to synthesize ideas on system design.

Enablers of Production:

1. Know the booking cycle time requirements for automated A-V materials dissemination systems.
2. Able to develop outline of items to cover in writing a report.

3. Able to do a PERT analysis of a process.
4. Able to use flowcharts to systematically chart a process in terms of cell and inputs and outputs of those cells.

Summaries of Product Data

Included here are summary tables that provide the frequency with which interviewees cited specific standards, tasks, and enablers within specified categories that were arbitrarily defined for this study.

Table 3 presents the categories of product standards and the frequency of citation within each. The categories cited most often, i.e., "completeness of content," "communication and clarity," reflect the developmental nature of the project. The system design is in the documents of the project. The documents, to be adequate, should be complete and clear.

Table 4 presents the categories of production tasks and the frequency of citation within each. Of the total number of tasks (113) cited, 32 were tasks of designing the output, 26 were tasks of clarifying the problem, and 21 tasks involved assessing the quality of generated outputs. No production tasks were cited that have to do with diffusing the output. This reflects the current efforts of the project in terms of designing and developing the system.

Table 5 presents the arbitrarily established categories of knowledges and the frequency of citation within each. Most of the knowledges cited tend to occur in the categories of "technical topics" and "resources: personnel," reflecting the reliance of the project upon technical expertise in systems analysis and design from a production point of view. From a management point of view it reflects a need for knowledge of present staff capabilities and commitments, as well as where to look for people that meet the requirements of the project.

Table 6 presents the categories of skills and the frequency of citation within each. "Finding fits/integrating" and "Planning/conceptualizing" are the two categories most frequently cited. Again these reflect the nature of the project, with the most relevant skills being production-related abilities in logical, sequential organization of information.

Table 7 presents the categories of sensitivities and the frequency of citation within each. In this project great emphasis is placed upon awareness of capabilities, constraints, and problems of staff members, and upon potential users of the system under design. Especially important from a management point of view was the facilitation of the work relationship between the prime contractor and the subcontractor.

TABLE 3

Frequencies of Citation of Product Standards in Each Product Standards Category

Categories of Product Standards	Frequency of Citation
Completeness of content	12
Quantity of outputs/data	0
Quantity of effort expended	0
Communication and clarity	8
Utility or value	5
Acceptancy by users	2
Personal satisfaction/feeling	7
Agreement/concurrence w/others	7
Lack of errors/discrepancies	5
Obvious (direct) termination	0
Appropriate design/content	1
Goal attainment	3
Acceptance by others (in project)	4
Acceptance by sponsor	2
Compliance w/sponsor guideline	2
Compares favorably	3
Internally consistent	6
Satisfactory appearance	3
Logical criteria	1
Performs consistently	0
Sources of variance controlled	0
Functions as planned	0
Successfully constrains/guides	0
Total Number of Standards Cited	71

TABLE 4

Frequencies of Citation of Production Tasks in Each Production Tasks Category

Categories of Production Tasks	Frequency of Citation
Clarifying problem addressed	26
Formulating objectives	8
Designing the output	32
Producing the output	16
Collecting/processing data	10
Assessing the output quality	21
Diffusing the output	0
Total Number of Tasks Cited	113

TABLE 5

Frequencies of Citation of Knowledges in Each Knowledges Category

Categories of Knowledges	Frequency of Citations
Standard school subjects	2
Subjects learned courses	0
Subjects related to RDD&E	3
Technical professional topics	29
Project focus topics, external	3
Project variables: external	6
Project operation: general	6
Project operation: specific	8
Scheduling and organizing	8
Staff status/responsibilities	2
Fiscal matters	0
Resources: personnel	11
Resources: money	0
Resources: time	0
Resources: equipment	0
Guidelines for reporting	1
Writing styles	1
Staff competencies/interests	0
Technical terminology	0
Sponsor concerns	0
Management techniques	1
Total Number of Knowledges Cited	81

TABLE 6

Frequencies of Citation of Skills
in Each Skills Category

Categories of Skills	Frequency of Citation
Teaching	0
Facilitating people interactions	3
Translating content to media	0
Using/applying feedback	0
Programming project events	4
Programming subject matter	0
Programming technical equipment	0
Analytical reading/study	3
Analytical problem solving	4
Analytical data handling	2
Disciplining self	4
Disciplining others	0
Listening	1
Writing	6
Presenting orally	2
Using media	0
Interpreting language	3
Finding fits/integrating	12
Planning/conceptualizing	9
Exercising judgment	4
Tracking activities/goals	1
Estimating expenses/resources	3
Persuading/justifying	1
Explicating goals/procedures	1
Applying measurement tools	4
Locating/maintaining information	1
Using equipment/systems	0
Running task oriented meetings	0
Getting others to perform	0
Adapting to situation/demands	0
Taking another perspective	2
Total Number of Skills Cited	70

TABLE 7

Frequencies of Citation of Sensitivities in Each Sensitivities Category

Categories of Sensitivities	Frequency of Citation
Values of self and others	3
Capabilities and limitations	10
Needs of self and others	3
Interactions of self and others	2
Context of subject matter	0
Worth in disciplines/methods	0
Context of objectives	1
Worth in objectives	0
Awareness of alternatives	1
Awareness of structure	1
Awareness of method	0
Role of catalyst/synthesizer	0
Language barriers	0
Reality in goal setting	2
Degrees of freedom to deviate	1
Existing value systems	1
Personality of others	1
Potential conflicts of interest	1
Supportiveness required	0
Unstated obligations	0
Limitations of analysis/data	0
Responses of target audience	2
Cost/benefit factors	0
Sources of error	1
Individual differences	0
Recognition of data needed	0
Acceptability of output	1
Admitting error/adapting	1
Willingness to experiment	1
Total Number of Sensitivities Cited	33

Interactions of Product Data

This section provides summary Tables 8 through 12 that present the relationship of standard, task, and enabler categories by frequency of occurrence to the product focus categories of research, development, diffusion, and evaluation products. The reader will note that in each table the product focus category of "development" contains the highest frequency, followed by the "diffusion" category. The other two categories in each case contain relatively small frequencies. The high frequencies of standards, tasks, and enablers in the "development" category reflect the nature of the products of the project and the project itself. The project is considered a "development" effort.

The high frequencies of descriptors in the "diffusion" category reflects another important aspect of this project. There is a great deal of diffusion in this project, but in a special sense. Since the subcontractor is producing most of the products of this project, due to the highly technical nature of the work, all the products (documents) are sent to the prime contractor's office for review. This is one level of diffusion within the project; however, there are two more that are important--one still within the project. The second level of diffusion within the project is to the National Advisory Committee. There are also diffusion efforts by means of a journal article and of information workshops. The latter diffusion efforts will not occur until the final stage of the project.

TABLE 8

Relation of Product Standards
to Product Categories

Categories of Product Standards	Product Focus			
	Research	Development	Diffusion	Evaluation
Completeness of content	3	3	5	1
Quantity of outputs/data	0	0	0	0
Quantity of effort expended	0	0	0	0
Communication and clarity	0	4	4	0
Utility or value	2	1	2	0
Acceptance by users	0	1	1	0
Personal satisfaction/feeling	0	6	1	0
Agreement/concurrence with others	0	6	1	0
Lack of errors/discrepancies	0	2	3	0
Obvious (direct) termination	0	0	0	0
Appropriateness of design	1	0	0	0
Goal attainment	0	1	2	0
Acceptance by others (in proj)	0	2	2	0
Acceptance by sponsor	0	2	0	0
Compliance with sponsor guidelines	0	0	2	0
Compares favorably	0	2	1	0
Internally consistent	0	2	4	0
Satisfactory appearance	0	3	0	0
Logical criteria	0	0	1	0
Performs consistently	0	0	0	0
Sources of variance controlled	0	0	0	0
Functions as planned	0	0	0	0
Successfully constrains/guides	0	0	0	0
Total Standards per Product Focus	6	35	29	1

TABLE 9

Relation of Production Tasks
to Product Categories

Categories of Production Tasks	Product Focus			
	Research	Development	Diffusion	Evaluation
Clarifying problem addressed	2	13	7	4
Formulating objectives	3	5	0	0
Designing the output	3	15	9	5
Producing the output	0	3	12	1
Collecting/processing data	2	1	0	7
Assessing the output quality	1	5	15	0
Diffusing the output	0	0	0	0
Total Tasks per Product Focus	11	42	43	17

TABLE 10

Relation of Knowledges to Product Categories

Categories of Knowledges	Product Focus			
	Research	Development	Diffusion	Evaluation
Standard school subjects	0	1	1	0
Subjects learned courses	0	0	0	0
Subjects related to RDD&E	0	3	0	0
Technical/professional topics	1	14	10	4
Project focus topics, external	1	1	0	1
Project variables: external	1	4	1	0
Project operation: general	0	4	1	1
Project operation: specific	1	4	1	2
Scheduling	0	8	0	0
Staff status/responsibilities	0	2	0	0
Fiscal matters	0	0	0	0
Resources: personnel	0	10	1	0
Resources: money	0	0	0	0
Resources: time	0	0	0	0
Resources: equipment	0	0	0	0
Guidelines for reporting	0	1	0	0
Writing styles	0	1	0	0
Staff competencies/interests	0	0	0	0
Technical terminology/language	0	0	0	0
Sponsor concerns	0	0	0	0
Management techniques	0	1	0	0
Total Knowledges per Product Focus	4	54	15	8

TABLE 11

Relation of Skills to Product Categories

	Product Focus			
Categories of Skills	Research	Development	Diffusion	Evaluation
Teaching	0	0	0	0
Facilitating of people interactions	2	1	0	0
Translating content to media	0	0	0	0
Using/applying feedback	0	0	0	0
Programming project/events	0	3	1	0
Programming subject matter	0	0	0	0
Programming technical equipment	0	0	0	0
Analytical reading/study	0	2	1	0
Analytical problem solving	0	2	1	1
Analytical data handling	0	1	1	0
Disciplining self	0	2	2	0
Disciplining others	0	0	0	0
Listening	0	1	0	0
Writing	0	3	3	0
Presenting orally	0	2	0	0
Using media	0	0	0	0
Interpreting language	0	2	0	1
Finding fits/integrating	0	6	5	1
Planning/conceptualizing	2	2	2	3
Exercising judgment	0	3	1	0
Tracking activities/goals	0	1	0	0
Estimating expenses/resources	0	3	0	0
Persuading/justifying	0	1	0	0
Explicating goals/procedures	0	1	0	0
Applying measurement tools	1	0	0	3
Locating/maintaining info	0	1	0	0
Using equipment/systems	0	0	0	0
Running task oriented meetings	0	0	0	0
Getting others to perform	0	0	0	0
Adaptation to situation/demands	0	0	0	0
Taking another's perspective	0	1	1	0
Total Skills per Product Focus	5	38	18	9

TABLE 12

Relation of Sensitivities to Product Categories

Categories of Sensitivities	Product Focus			
	Research	Development	Diffusion	Evaluation
Values of self and others	0	0	2	0
Capabilities and limitations	1	9	0	0
Needs of self and others	0	1	2	0
Interactions of self and others	1	1	0	0
Context of subject matter	0	0	0	0
Worth in disciplines/methods	0	0	0	0
Context of objectives	0	1	0	0
Worth in objectives	0	0	0	0
Awareness of alternatives	0	1	0	0
Awareness of structure	0	0	1	0
Awareness of method	0	0	0	0
Role of catalyst/synthesizer	0	0	0	0
Language barriers	0	0	0	0
Reality in goal setting	0	1	1	0
Degrees of freedom to deviate	0	0	1	0
Existing value systems	0	1	0	0
Personality of others	0	1	0	0
Potential conflict of interest	0	1	0	0
Supportiveness required	0	0	0	0
Unstated obligations	0	0	0	0
Limitations of analyses/data	0	0	0	0
Responses of target audiences	0	0	0	2
Cost/benefit factors	0	0	0	0
Sources of error	0	1	0	0
Individual differences	0	0	0	0
Recognition of data needed	0	0	0	0
Acceptability of output appearance	0	1	0	0
Admitting error/adapting	0	1	0	0
Willingness to experiment	0	0	0	1
Total Sensitivities per Product Focus	2	20	7	3

Chapter IV: Details on Each Management Responsibility

This chapter contains (a) for each interviewed management responsibility a listing of all the standards, tasks, and enablers identified during interviews; (b) a summary of citation within each category of standards and tasks (the enablers are included in summary Tables 5, 6, and 7 in Chapter III); and (c) the relationships of standard and task categories to product categories by frequency.

The following are listings of production management responsibilities and environmental management responsibilities.

Production Management Responsibilities

The management responsibilities detailed in this section are those responsibilities that relate directly to management of production activities for the project.

Listing of standards, tasks, and enablers. Each management heading is followed by a brief annotation containing: (a) an indication of the duration of the responsibility within the duration of the project; (b) whether the responsibility was being performed at time of observation; (c) a description of the responsibility; (d) the level (foundational, terminal, intermediate, or focal) of the responsibility; and (e) the significant relationship(s) with other responsibilities in the project.

Following the annotation is a brief statement of the interviewee's work focus to the responsibility, and then the standards, tasks, and enablers listed under their separate subheadings to identify:

1. The standards by which the responsibility is judged or controlled.
2. The tasks involved in fulfilling the responsibility.
3. The enablers necessary for fulfilling the responsibility stated in the form of (a) knowledges, (b) skills, and (c) sensitivities to be possessed by project personnel.

PM-59: Product Specifications

This responsibility was initiated at the start of the project. It is ongoing throughout the duration of the project and was operating at the time of observation. It is a judging of a product's acceptability by review of subcontractor products to insure inclusion of all relevant information. This is a Level III (intermediate) responsibility. By allowing for quality control and by setting production parameters, it relates to Quality Control Mechanisms (EM-63) and Manage Production of Documents (PM-65).

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Work Focus of the Interviewee to this Responsibility:

This responsibility was interviewed around once. The interviewee performed the responsibility with assistance from a guidance group.

Responsibility Standards:

1. Concensus within guidance group that document contains all relevant items.
2. When all the information that has come to me (Project Director) is included. (see Task 1, below)

Responsibility Tasks:

1. Insure that instructional materials information desired by librarians and others within prime contracting agency is made available to subcontractor.
2. Determine means of handling information about materials.

Enablers of Responsibility:

1. Skill in writing behavioral objectives and being able to recognize the quality of objectives statements.
2. Skill in making decisions quickly.

PM-65: Manage Production of Documents

This responsibility is ongoing throughout the duration of the project and was operating at the time of observation, involving decisions on format inclusions/exclusions and the appropriateness of document contents. This is a Level III (intermediate) responsibility. The details specified below are carried out by the subcontractor staff and directly relate to Quality Control Mechanism (EM-63) and Product Specifications (PM-59). Both the latter responsibilities are those of the prime contractor.

Work Focus of the Interviewees to this Responsibility:

This responsibility was interviewed around twice. The interviewees performed the responsibility within the subcontractor staff.

Responsibility Standards:

1. Function that had to be performed was described.
2. The data elements were necessary to support the function that was performed.
3. The relationships make logical sense because nothing was excluded from documents.
4. Were some things excluded?
5. The document indicated from where the required information was going to come.
6. Output of system was compatible with other existing systems.
7. Intended usage was explicity stated.
8. The system approaches are comparable to existing systems in philosophy and concepts.
9. The system can be maintained by existing staff.
10. The system can be understood by educators.
11. There is full coverage in document of costs for collecting and maintaining data.

Responsibility Tasks:

1. Decide spacing of the document, e.g., single or double space.
2. Decide printing specifications, e.g., single or double side.
3. Determine layout and format of a document.
4. Select proper and appropriate illustrations for a document.
5. Insure an adequate table of contents for a document.
6. Determine if document contains all major areas such as inputs, outputs, etc.
7. Determine if document includes all of the major inputs.
8. Determine if the inputs are verified by data.
9. Determine if the inputs were secured from field analysis.
10. Judge if results of documents are learnable by users.
11. Determine if the document includes a functional description.
12. Monitor adherence of requirements specifications to proposal specifications.
13. Determine if output section of the document is complete.
14. Assign responsibility for production to staff members.
15. Determine if all sections of the documents and the requirements are related.

Enablers of Responsibility:

1. General knowledge of educational establishment philosophy, practice, and procedures.
2. Knowledge of how the computer programs operate.
3. Knowledge of different computer programming languages, including their advantages and disadvantages.
4. Knowledge of expertise within staff.

5. Knowledge of Program Evaluation and Review Technique (PERT) procedures and interpretation.
6. Skill in being precise rather than general.
7. Skill in dealing with particulars, details, and minutiae.
8. Skill in data processing techniques.
9. Skill in analysis of problems.
10. Skill in being able to specify the problem.
11. Skill in scheduling and following up.
12. Sensitivity to needs of final user or system.
13. Awareness (inhouse) of how close one can cut the deadlines and push the system.

Environmental Management Responsibilities

The management responsibilities detailed in this section are those responsibilities that relate to management and maintenance of the project environment.

Listing of standards, tasks, and enablers. The presentation of the materials in this section is in the same format as the preceeding.

EM-57: Staff--hiring

This responsibility was accomplished at the initiation of the project and was not in operation at the time of observation. The responsibility heading is self-descriptive. This is a Level III (intermediate) responsibility. There are no significant or unique relationships to report between this responsibility and others.

Work Focus of the Interviewees to this Responsibility:

This responsibility was interviewed around twice. Both interviewees, one in the prime contractor staff and the other in the subcontractor staff, are directly responsible for hiring.

Responsibility Standards:

1. Feedback indicator: The creative response of staff members to problems.
2. The national reputation of individuals.
3. The opinion of others.
4. The logic of the argument that staff is adequate.
5. The good reputation of the agency with the sponsor.

6. The concensus of the guidance committee.
7. Feeling that staff understands project expectations.
8. Staff members are compatible with other members of the project staff.
9. Staff member accomplished and/or completed tasks or products.
10. The product (software and/or hardware) that an individual produces has accomplished its purpose or works.

Responsibility Tasks:

1. Inquire through colleagues and friends to get leads or suggestions of candidates.
2. Create descriptive phrases as to the kind of candidate you are looking for to hire.
3. Review resumes of identified candidates.
4. Inquire as to potential staff member's availability--ask if he/she is available for hiring.
5. Approach candidate to find out if he is interested in the job.
6. Make an offer to the candidate.
7. Justify the need for staff--type and number--to the department manager.
8. Notify department manager to indicate that a potential staff member has been identified.
9. Secure department manager's approval to employ an individual.
10. Inquire through manpower data file (computerized vitae file of company employees) to identify potential candidates.
11. Determine technical need required to perform system analysis.
12. Determine technical competence of existing staff to perform system analysis.
13. Determine if qualified people on staff are available for project work.
14. Determine if qualified personnel can do systems analysis with emotional detachment.
15. Seek a person who enjoys working in this type of project.
16. Decide to subcontract major part of project because of lack of inhouse experts.
17. Publicize need for subcontractor to perform project.
18. Select subcontractor on basis of price and reputation.
19. Select personnel to judge subcontract bid on basis of feasibility.
20. Negotiate final price of subcontract with sponsor and subcontractor.

Enablers of Responsibility:

1. Personal knowledge of potential staff--capabilities.
2. Know how the agency writes up a personnel evaluation in terms of style.
3. Knowledge of competencies of present staff.
4. Knowledge of workload of present staff.
5. Knowledge of possible replacement of staff.
6. General knowledge of computers.

7. Knowledge of national reputations of people.
8. Knowledge of where to search for experts.
9. Knowledge of people holding positions parallel to present openings.
10. In reading (what to look for) a personnel resume.
11. Sensitivity to criticalness of staff's present job positions.
12. Sensitivity to desire and interest of individual in the project.
13. Sensitivity to capacity of those who promise too much.

EM-58: Budget

This responsibility is ongoing throughout the duration of the project and was in operation at the time of observation. The responsibility heading is self-descriptive. This is a Level III (intermediate) responsibility. There are no significant or unique relationships to report between the responsibility and others.

Work Focus of the Interviewees to this Responsibility:

This responsibility was interviewed around twice. Both interviewees, one in the prime contractor staff and the other in the subcontractor staff, are directly responsible for budget management.

Responsibility Standards:

1. Concensus by budget experts.
2. Items are in line with other budgets.
3. Met the predicted budget or undercut the cost estimates.
4. Customer says they are happy with the outcome.
5. Customer funds you with a follow-on project.

Responsibility Tasks:

1. Determine travel needs of project staff.
2. Other recommendations about cost estimates from budget experts in department.
3. Discuss budget figures with sponsoring organizations.
4. Obtain recommendations about cost estimates from technical support group.
5. Determine realistic costs within the proposal--especially on a fixed-price contract.
6. Determine categorical cost estimates within the budget.
7. Update budget categorical cost estimates--periodically throughout duration of the project.

8. Prepare a detailed spending plan--amplification of the proposal budget.
9. Write a monthly budget report--usually a gross or general report of what was spent and for what purposes.
10. Approve spending of funds, e.g., travel cost/time logs.
11. Review monthly financial statements from the agency business office to determine amount of variance in relation to the predetermined spending plan.
12. From the review of the financial statement, isolate or pinpoint trouble areas in spending--overspent and/or overestimated areas.
13. Reconcile problem of inaccurate expenditures encumbered.

Enablers of Responsibility:

1. Know rudimentary mathematics.
2. Know content area within proposal to plan costs.
3. Know how to read company financial statements--the forms.
4. Know how to realistically estimate resources relative to work that has to be done on the project.
5. Knowledge of available budget experts.
6. Sensitivity to mistakes made in past.
7. Sensitivity to one's own ability and self-confidence.
8. Confidence in the judgment of experts.

EM-60: Staff Welfare

This responsibility is ongoing throughout the duration of the project and was in operation at the time of observation. The responsibility heading is self-descriptive. This is a Level III (intermediate) responsibility. There are no significant or unique relationships to report between this responsibility and others.

Work Focus of the Interviewees to this Responsibility:

This responsibility was interviewed around once with the interviewee having the responsibility.

Responsibility Standards:

1. Information from secretary indicates personnel satisfaction.
2. Happy faces around the office.
3. Personnel are silent and moody.

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Responsibility Tasks:

1. Write clear job descriptions for each staff position.
2. Develop an organization in which people can openly work with each other.
3. Assign clear lines of authority.
4. Monitor staff awareness of their individual responsibilities.
5. Listen to subordinates about personal as well as project problems.
6. Allow staff the freedom to create as well as to solve problems.
7. Insure job (not financial) security of staff by "permanent" assignments.
8. Listen to the complaints of the staff.
9. Inform staff of all project activities.

Enablers of Responsibility:

1. Skill in listening to others.
2. Sensitivity to the needs of other people.
3. Sensitivity to the problems people have.
4. Sensitivity in keeping calm during crisis.

EM-61: Adequate Intra/Interagency Relationships

This responsibility is ongoing throughout the duration of the project and was in operation at the time of observation. Due to the organizational profile of this project with a prime contractor being dependent upon the subcontractor as a production agent, this responsibility is highly important to the project. This is a Level III (intermediate) responsibility. This responsibility is linked to the Project Management Decision Structures (EM-62) through the Detailed Project Plan by the nature of the project organization. Several committees review the products of the project, which is closely monitored by the prime contractor staff, and route comments into the subcontractor production staff. Also, the great numbers of potential users of this project's products place much importance on this responsibility.

Work Focus of the Interviewees to this Responsibility:

This responsibility was interviewed around twice. Both of the interviewees, one in the prime contractor staff and the other in the subcontractor staff, perform the responsibility.

Responsibility Standards:

1. People are cooperative without pressure.
2. There is feedback from the user agency.
3. User agency is persuaded of your point of view.

Responsibility Tasks:

1. Establish rapport with each individual that has more than transitory contact with the project to maintain awareness of concerns.
2. Talk to project (user agency) people to get a feel for how much they know and how it relates to the project.
3. Deliver and explain all documents to the customer (user agency).
4. Inform the staff about all activity going on within project.
5. Accommodate user agency by giving presentations relative to the project to various groups.
6. Provide user agency some extra products (promotional).
7. Report status of project to national advisory board on regular basis.
8. Inform state committee about status of project at regular intervals.
9. Inform the sponsoring agency about the status of the project at regular intervals.
10. Participate in interagency meetings for informing all parties concerned.
11. Explain to the customer what is expected in terms of feedback.
12. Decide who should be given what information about the project.

Enablers of Responsibility:

1. Know what the customer's work is about and how it relates to the project.
2. Knowledge of who makes which decisions.
3. Knowledge of who needs what information.
4. Ability to inspire the customer's confidence in Project Director and staff.
5. Ability to understand the customer's jargon.
6. Ability to speak in front of a group of people.
7. Ability to answer questions under pressure.
8. Insight into an individual's personality--can figure out what pleases him.
9. Sensitivity about human relationships.
10. Keeping aware of all activities going on.

EM-62: Project Management Decision Structure

This responsibility was initially established very early in the project and is ongoing throughout its duration. It was in operation at the time of observation. The responsibility heading is self-descriptive. This is a Level III (intermediate) responsibility. This responsibility is rooted in the philosophy of the project and feeds into all the others.

Work Focus of the Interviewees to this Responsibility:

This responsibility was interviewed around once with the interviewee having the responsibility.

Responsibility Standards:

1. I feel confident in decision made.
2. People are happy with decisions made.

Responsibility Tasks:

1. Decide who should make which decisions.
2. Decide who should make decisions about priorities.
3. Review national board opinion, but do not allow them decision-making power.

Enablers of Responsibility:

1. Knowledge of systems concepts.
2. Skill in making decisions.
3. Sensitivity to one's own limitations.
4. Confidence in other people's judgment.

EM-63: Quality Control Mechanism - Schedules

This responsibility is ongoing throughout the duration of the project and was in operation at the time of observation. The responsibility heading is self-descriptive. This is a Level III (intermediate) responsibility. The Detailed Project Plan, developed at the initiation of the project, feeds into this responsibility.

Work Focus of the Interviewee to the Responsibility:

This responsibility was interviewed around once. The interviewee (member of prime contractor staff) performed the responsibility as a monitor of production by the subcontractor.

Responsibility Standards:

1. Concensus of guidance committee.
2. Work accomplished according to plan.
3. Has no apparent discrepancies.

Responsibility Tasks:

1. Monitor expenditure of funds by staff.
2. Monitor expenditure of time by staff on various parts of the project.
3. Monitor adherence to project policy by all members of the staff.
4. Recommend corrective action for deviations from schedules as necessary.
5. Estimate if proposed timeline is realistic for job to be done.
6. Counsel with various members of the staff about their problems.
7. Monitor the flow of information between staff and subcontractor staff.
8. Plan and conduct staff meetings.
9. Inform all concerned parties about decisions made within project.

Enablers of Responsibility:

1. Knowledge of what PERT is and how it operates.
2. Knowledge of various management techniques.
3. Knowledge of educational establishment, philosophy, people, and procedures.
4. Knowledge of field setting staff organization.
5. Skill in developing flow charts.
6. Sensitivity to field setting protocol and procedures.
7. General knowledge of data processing procedures.

PM-67: Staff - Work Scheduling

This responsibility is ongoing throughout the duration of the project and was in operation at the time of observation. The responsibility heading is self-descriptive. This is a Level III (intermediate) responsibility. The Detailed Project Plan, developed at the start of this project, feeds into this responsibility.

Work Focus of the Interviewee to this Responsibility:

This responsibility was interviewed around once. The interviewee (member of subcontractor staff) performed the responsibility to insure the production process.

Responsibility Standards:

1. Staff has produced products within time constraints.
2. Staff has produced product within budgeting constraints.
3. Individual has produced as much or more than was expected.
4. Individual has carried out tasks in an exemplary manner.

Responsibility Tasks:

1. Assign tasks or pieces of work to staff members.
2. Establish schedule time lines for task completion.
3. Identify other personnel (within the agency) to carry out tasks--agency specialists that might be needed periodically.
4. Arrange to use (time of) personnel identified in the agency.
5. Review the work or staff performance of tasks.
6. Consider work loads in the assignment of tasks.

Enablers of Responsibility:

1. Have technical competence (relative to technical knowledge within content area of the project) so staff is confident in you.
2. Knowledge of personnel psychology.
3. Knowledge of interview techniques.
4. Knowledge of content and specialty (related to project content) areas.
5. Ability to communicate well with staff.
6. Skill of writing a task assignment to insure understanding by staff of the task.
7. Ability to reduce technical jargon to level audience understands.
8. Have the maturity to admit your mistakes.
9. Awareness of each staff member's technical competence.
10. Sensitivity to each staff member's personal problems.
11. Sensitivity to each staff member's capacities in terms of workload and pressures they can handle.

Summaries of Management Responsibilities Data

Tables 13 and 14 are summaries by frequency of citation within categories of management responsibility standards and tasks.

In Table 13, the categories of standards with the highest frequencies are "personnel satisfaction", "operational demands equate with estimate/projections," and "cost-benefit relationships are acceptable." In this project, management standards are based on the total staff judgment or the judgments of committees that production rates are within knowledgeable estimates and that products are efficient.

In Table 14, the categories of tasks with the highest frequencies reflect the emphasis within this project on production control and environmental management in terms of staffing, securing consultants, and dissemination of product and project information.

TABLE 13

Frequencies of Citation of Standards for Management Responsibilities in each Standards for Management Responsibility Category

Categories of Standards for Management Responsibilities	Frequency of Citation
Personnel cooperate	1
Personnel are satisfied	4
Minimum correction required	0
Deadlines are met	2
Acceptable level of output	2
Work structure is efficient	0
An expected activity occurs	0
Staff contributions accepted	0
Outside contributions accepted	0
Maximum possible participation	0
Cost consistent with estimates	3
No obvious omissions	0
Work conducted within budget	2
No felt deficiencies	0
Tasks perceived and acted upon	1
External cooperation gained	1
External enthusiasm evident	0
Desired personnel obtained	1
Adequate reputation with sponsor	1
Performance respected	1
Follow-on proposals are funded	1
Feedback occurs	1
Project view accepted	1
Cost acceptable for benefits	3
Total Number of Standards Cited for Management Responsibilities	25

TABLE 14

Frequencies of Citation of Tasks in Each Tasks Category

Categories of Management Responsibilities Tasks	Frequency of Citation
Procuring professional staff	17
Effecting accountability	34
Procuring systems/services	9
Effecting quality control	13
Maintaining job satisfaction	6
Facilitating growth of staff	0
Enhancing physical environment	0
Maintaining equity among staff	1
Facilitating relationships	4
Effecting information flow patterns	0
Diffusing information within project	8
Diffusing information beyond project	5
Effecting decision mechanisms	1
Total Number of Tasks Cited	98

Interaction of Management Responsibility Data

Tabulations of management responsibility standards and tasks by product focus are found in Tables 15 and 16. The category of responsibility focus in both tables containing the highest frequencies is that of development. In addition, some effort in diffusion can be noted in Table 16.

TABLE 15

Relation of Standards for Management Responsibility to Product Categories

Categories of Standards for Management Responsibilities	Responsibility Focus			
	Research	Development	Diffusion	Evaluation
Personnel cooperate	0	1	0	0
Personnel satisfied	0	4	0	0
Minimum correcting required	0	0	0	0
Deadlines are met	0	2	0	0
Acceptable level of output	0	2	0	0
Work structure is efficient	0	0	0	0
Expected activity occurs	0	0	0	0
Staff contributions accepted	0	0	0	0
Outside contributions accepted	0	0	0	0
Maximum possible participation	0	0	0	0
Costs consistent with estimates	0	3	0	0
Obvious omissions	0	0	0	0
Work conducted within budget	0	2	0	0
No felt deficiencies	0	0	0	0
Tasks perceived and acted upon	0	1	0	0
External cooperation gained	0	1	0	0
External enthusiasm evident	0	0	0	0
Desired personnel obtained	0	1	0	0
Adequate reputation with sponsor	0	1	0	0
Performance respected	0	1	0	0
Follow-on proposals are funded	0	1	0	0
Feedback occurs	0	1	1	0
Project view accepted	0	1	1	0
Costs acceptable for benefits	0	1	0	2
Total Number of Standards Cited for Management Responsibilities	0	23	2	2

TABLE 16

Relation of Management Responsibility Tasks to Product Categories

Categories of Management Tasks	Responsibility Focus			
	Research	Development	Diffusion	Evaluation
Procuring professional staff	0	17	0	0
Effecting accountability	0	29	5	0
Procuring systems/services	0	9	0	0
Effecting quality control	0	9	4	0
Maintaining job satisfaction	0	6	0	0
Facilitating growth of staff	0	0	0	0
Enhancing physical environment	0	0	0	0
Maintaining equity among staff	0	1	0	0
Facilitating relationships	0	2	0	0
Effecting information flow patterns	0	3	1	0
Diffusing information within project	1	6	0	1
Diffusing information beyond project	0	5	0	0
Effecting decision mechanisms	0	1	0	0
Total Tasks per Responsibility Focus	1	88	10	1

Chapter V: Supplementary Data

Product Frequency of Occurrence by Category

Table 17 presents a summarization of products and management responsibilities by the research, development, diffusion, and evaluation focus. These results, as are all the summary results, are based upon the coding categories under development in the present study.

The reader will note that under product focus the greater frequencies occur in "development," followed by "diffusion." In "development" the greater frequencies occur in all three categories of output orientation. But in "diffusion" the highest frequencies occur in the production orientation. This reflects the subcontractor's efforts in dissemination of its products to the prime contractor, as well as the preparation of a journal article and workshops. The highest frequencies occur in output orientation under production and environmental management. The former reflects the effort of the prime contractor. The profile that emerges is one of primarily a development effort with a production orientation. Emerging as supportive to these is the diffusion effort and the environmental management orientation.

Note the relatively high frequency occurring in the evaluation focus under production orientation. Most of the initial production effort in this project was the evaluation of existing automated information systems in use.

TABLE 17

Frequencies of Types of "Responsibilities"
(Products and Management Outcomes)

Product/Responsibility Focus	Output Orientation			
	Production	Production Management	Environmental Management	Product Focus Totals
Research	1	0	0	1
Development	18	7	17	42
Diffusion	11	3	1	15
Evaluation	10	1	0	11
Output Orientation Totals	40	11	18	69

Summary of Staff Backgrounds

The information in this section is based on only the responses of the eight staff members of the AIMS project who were formally interviewed.

Months on the project. At the time of observation the project was entering the seventh month of its work, having begun June 1, 1970. The duration of time on the project in months per each interviewee has the following distribution. The duration of the project is 12 months.

	Months of Project Experience		
	0 - 1	2 - 6	7 - 12
Number of staff	0	2	6

Current percentage of time assigned to project. At the time of observation the eight staff interviewed had the following percentage of full-time equivalency (FTE) assigned to this project.

	Percentage of FTE		
	25% or less	30% to 60%	65% or more
Number of staff	2	4	2

The two staff members with assignments of 65% or more filled assistant management positions in the project. One in the prime contractor's office and the other in the subcontractor's office.

Highest degrees attained. Table 18 identifies the number of degrees held by the staff at each level and the areas of specialty of each degree.

National professional memberships. The following professional organizations are represented by one or more of the interviewed staff having membership(s) in one or more of the organizations.

1. American Society of Information Science
2. Society of Technical Writers and Publishers
3. National Microfilm Association
4. American Library Association
5. Special Library Association

TABLE 18

Frequency of Degrees per Specialty Area

Specialty Area	Highest Degree		
	Bachelor's	Master's	Specialist
Education/teaching		1	
Business Administration	1		
Information Science (Documentation)		1	
Library Science		2	1
Language	1		
Advertising & Marketing	1		
Totals	3	4	1

Prior work experience. Table 19 displays the distribution of years of work experience of the eight staff members interviewed within eight setting categories.

TABLE 19

Distribution of Staff Work Experience per Work Setting Category

Work Setting Category	Amount of Experience			
	No Experience	Less than 1 year	1 - 4 years	5 or more years
In R,D,D, or E Work	1	0	2	5
In Administrative Work	0	1	1	6
In College Teaching or Research	7	0	1	0
In Public Schools	4	0	1	3
In State or National Education Agencies	7	0	1	0
In R & D Centers	5	0	1	2
In Present Organization (may be concurrent with other areas above)	0	0	3	5
In Other Work Settings	4	0	0	4

Summary of Interviewee Responses

Present position requirements. Four questions asked of the eight interviewees are stated below with their responses. The responses are listed by position.

Question 1: "What specific knowledges and skills does (your) position require?"

Principal Investigator and Project Director

1. Administration skills.
2. Project development and management skills.
3. Knowledge of state and national trends in field studies.
4. Knowledge of people with expertise in field studied.

Deputy Director and Project Monitor

5. Management techniques that include organizational patterns.
6. Knowledge of accounting and budgeting.
7. Contract procurement procedures.
8. Systems analysis (PERT chart and flow-charting).
9. Data processing.

Planning and Guidance Panel Member

10. Problem analysis and systems design.
11. Computing system hardware, software, and languages. (This position serves as a computer systems consultant position to the Project Director.)

Project Manager (subcontractor)

12. Knowledge of computers and data processing.
13. Knowledge of librarianship.
14. Writing skill.
15. Personnel management skill.

Assistant Project Manager (subcontractor)

16. Knowledge of system design concepts.
17. Writing skills.
18. Administrative skills.

Senior Systems Analyst (subcontractor)

19. Systems analysis and design.
20. Publications.
21. Communications, system analysis and design skills.

System Testing and Library System Specialist (subcontractor)

22. Requirements analysis.
23. System design.
24. Programming.
25. Information management.

Question 2: "How many years of work experience does (your) position require in educational research, development, diffusion, and/or evaluation?"

1. Five interviewees indicated that one to four years of experience was required. Their positions were Principal Investigator and Project Director, Deputy Director, Assistant Project Manager (subcontractor), Senior System Analyst (subcontractor), and System Testing and Library Systems Specialist (subcontractor).

2. Three interviewees indicated that five years or more experience was required. These positions were Planning and Guidance Panel members (computer expert), Project Manager (subcontractor), and Senior Systems Analyst (subcontractor).

Note in Table 19 that one interviewee had no experience in R,D,D,&E work, while two had between one and four years experience and five had at least five years experience.

Question 3: "How many years work experience does (your) position require in administration or management?"

1. One interviewee indicated no administrative experience necessary. (This position was production orientated.) The position was System Testing and Library Systems Specialist (subcontractor).

2. One interviewee indicated that some, but less than a year's experience in administration was required for this position. The position title was Assistant Project Manager (subcontractor).

3. Five interviewees indicated that one to four years experience was important to their positions. The position titles are Principal Investigator and Project Director, Deputy Project Director, Project Manager (subcontractor), and Senior Systems Analyst (subcontractor).

4. One interviewee indicated that five years or more experience in administration was important to his position. The position title was Planning and Guidance Panel Member (computer expert).

Question 4: "Academically (your) position requires which degree?"

Position title	Degree Interviewee Presently holds	Degree Interviewee Indicated Position Required
Principal Investigator and Project Director	master's	master's
Deputy Director	master's	master's
Planning and Guidance Panel Member	bachelor's	bachelor's
Project Manager	specialist	specialist
Assistant Project Manager	bachelor's	bachelor's
Senior Systems Analyst	bachelor's	bachelor's
System Testing and Library Systems Specialists	master's	none
Senior Systems Analyst	master's	doctorate

Support resources. The support resources, both service and equipment, used by the personnel on this project were:

1. Support services used:

   Printing.
   Duplication services.
   Photography.
   Art work and illustrations.
   Secretarial service.
   Typing.
   Library services.
   Computer analysis services.
   Computer program writing.
   Audio-visual aids and devices.
   Customer supervisory personnel.

2. Support equipment used:

   Dictating or recording equipment.
   Desk calculator.
   Remote computer terminal.
   Onsite computer.
   Keypunch machine.
   Photographic equipment.
   Typewriter.

Classifications of Outputs

As the Oregon Studies evolved it became evident that outputs could be categorized in terms of a number of variables. Among them are (a) Structure (product, event, or condition), (b) Function (policy setting, management, or production), (c) Level (focal, component, or facilitating), (d) Character (knowledge, technology, implementation, or information), and (e) Stage of Completion. These five schema are represented in Table 20 for each project output identified, with frequencies summarized for each category. Table 20 has been added to this profile subsequent to the profile's original writing.

TABLE 20

Classifications of Output Characteristics

Project Outputs		Output Characteristic[a]																		
		Structure			Function			Level			Character (Products only)				Completion Stage					
No.	Label	p	e	c	re	m	p	l_1	c	l_2	s	t	l_1	l_2	1	2	3	4	5	6
PM-02	Tentative Implementation Schedule	X				X				X		X					X			
*P-03	Cost Estimates for System	X					X		X			X					X			
P-04	System Qualifications Testing Procedures	X				X				X		X					X			
P-05	Prioritized List of Major Subsystems	X				X				X				X			X			
*P-06	Preliminary System Implementation Plan	X					X			X		X					X			
P-07	Design Review and Concurrence Package	X				X				X				X				X		
P-08	Design Review Comments	X				X				X				X				X		
P-09	Modified System Design	X					X			X		X						X		
P-10	Design Review Report (Informal)	X				X				X			X					X		
P-11	Hardware Requirements	X					X			X		X						X		
P-12	Software Design Specification Per Major Subsystem	X					X		X			X							X	
P-13	Operation Specifications Per Major Subsystem	X				X			X			X							X	
P-14	System Documentation Specifications	X					X		X			X						X		
P-15	Major Subsystem Specifications	X					X		X			X						X		
P-16	Final System Specifications	X					X	X				X							X	
P-17	Detailed Task Description for System Implementation Plan	X				X			X			X							X	
PM-18	Major Cost Categories for System Implementation Plan	X				X			X			X						X		
PM-19	Detailed Schedules of System Implementation Plan	X				X			X			X							X	
P-20	System Implementation Organization and Procedures	X				X			X			X						X		
PM-21	System Monitoring and Improvement Procedures	X				X			X			X						X		
P-23	Final System Implementation Plan	X					X	X				X							X	
P-24	Final Documentation (Of Project)	X					X	X				X							X	
*P-25	Proposal - L.A.U.S.D.	X				X				X		X			X					
P-26	Interview Guide - L.A.U.S.D.	X				X				X		X				X				
*P-27	Questionnaire	X				X				X		X				X				
PM-28	Task Chart	X				X				X		X				X				
PM-29	PERT Chart	X				X				X		X				X				
PM-30	Project Work Plan	X				X				X		X				X				
PM-31	Project Reporting Procedures	X				X				X		X				X				
PM-32	Coordination and Liaison Procedures between SDC and L.A.U.S.D.	X				X				X		X				X				
PM-33	Lists of other cities and school districts for visits (2 great cities; 4 Calif. cities)	X				X				X				X		X				
PM-34	Detailed Project Plan	X				X				X		X				X				
P-35	Systems Analysis Documentation	X				X				X				X		X				
*P-36	Interview (Protocol)	X				X				X				X		X				
*P-38	Bibliography	X				X				X				X		X				
P-39	List of User Classes	X				X				X				X		X				
P-40	List of User Needs	X				X				X				X		X				
P-41	Reports of LAUSD I.M. Handling Practices	X				X				X				X		X				
P-42	Report of Interface Analysis	X				X				X				X		X				
P-43	Reports of I.M. Handling Practices in Other Cities	X				X				X				X		X				
P-44	Preliminary Systems Requirement Document	X					X			X		X				X				
*P-45	Final Systems Requirement Documents	X					X		X			X				X				

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TABLE 20 concluded

Classifications of Output Characteristics

Project Outputs		Output Characteristic[a]																		
		Structure			Function			Level			Character (Products only)				Completion Stage					
No.	Label	p	e	c	ps	m	p	f_1	c	f_2	k	t	i_1	i_2	1	2	3	4	5	6
P-46	System Design Alternatives Evaluation Procedure	X				X				X		X				X				
P-47	System Design Concepts	X				X				X		X				X				
*P-48	Pilot System of Automated Instructional Materials Handling System	X					X			X		X					X			
*P-49	Preliminary System Description	X					X			X		X					X			
P-50	System Description	X					X		X			X					X			
PM-51	Checklist for Design Review and Concurrence Package	X				X				X		X					X			
*P-52	Journal Article	X				X				X			X						X	
PM-53	Information Workshop		X			X				X									X	
*EM-54	Sub-contractor to Prime Contractor Monthly Report	X				X				X			X							X
P-55	Two other Cities Site Visit Trip Reports	X				X				X				X		X				
P-56	LAUSD Site Visit Reports	X				X				X				X		X				
*EM-57	Staff - Hiring		X			X				X						X				
*EM-58	Budget	X				X				X		X								X
*PM-59	Product Specifications	X					X			X		X								X
*EM-60	Staff - Welfare			X		X				X										X
*EM-61	Adequate Inter/Intra Agency Relationships			X		X				X										X
*EM-62	Project Management Decision Structure			X		X				X						X				
*PM-63	Quality Control Mechanism - Schedules	X				X				X		X				X				
*PM-64	Progress Reports	X				X				X				X						X
*PM-65	Managed Production of Documents			X		X				X										X
*PM-67	Staff - Work Scheduling		X			X				X										X
P-68	Interview Guide (Other Cities)	X				X				X		X				X				
EM-69	Maintained Philosophy of Approach to Problem			X	X					X										X
EM-70	Sub-contractor's Internal Monthly Report to Division Head	X				X				X			X							X
*P-71	Audio-visual Instructional Materials System Requirements	X					X		X			X				X				
P-72	Proposal - SDC	X				X				X		X			X					
P-73	User Needs Analysis Documentation	X				X				X				X		X				
Classification Frequencies[b]		61	3	5	1	51	17	3	13	53	0	41	4	16	2	29	9	10	9	10

[a] The specific output characteristics are identified as follows:

Structure	Function	Level	Character	Completion Stage
p - product	ps - policy setting	f_1 - focal	k - knowledge	1 - completed over one year ago
e - event	m - management	c - component	t - technology	2 - completed 3 to 12 months ago
c - condition	p - production	f_2 - facilitating	i_1 - implementation	3 - completed within last 3 mos.
			i_2 - information	4 - currently in progress
				5 - not yet underway
				6 - on going (continuous)

[b] Data totals in this table may vary slightly from data in tables reported elsewhere. This is a function of decision rules governing classification of outputs having been revised and applied to these data subsequent to the preparation of the profile.

Chapter VI: Project Dynamics

Origin of the AIMS Project

The roots of this project can be traced to a State (California) Department of Education meeting called to bring together the two fields of library (book) and audio-visual (nonbook) instructional materials to provide a closer working association between them. Based on discussions at that time the development of this project was initiated within the Los Angeles Unified School District.

Early in the planning, the scope of the project was expanded to include the areas of textbook and science-center materials, along with library and audio-visual.

It took three years to write and fund this project. Once goals and parameters for the project were established, the school district issued a request for proposals to several potential subcontractors. The PGP in the school district and the National Advisory Committee monitoring bodies were established to oversee the production effort of the subcontractor. This was done to assure relevance in the system to be designed to the school district needs and to the needs of school districts nationally.

Within the school district the project was originally in the Division of Instructional Planning and Services, but in District reorganization it was moved to the Division of Special Services. The District recently reorganized to decentralize operations, so that sections are now semi-autonomous within Divisions. Consequently there seems to be minimal agency-level involvement with this project. The precise nature of District involvement was not determined in the study interviews.

Physical Setting

The offices of the prime contractor (LAUSD) staff are located in downtown Los Angeles. Members of the interview team reported that the offices were quite suitable and comfortable. Adjacent to the Project Director's office was a small conference room containing one table and bookshelves. Nearby is the library set up for use by teachers and District staff. On the floor below the offices, were the District's television studios. District and Division offices are located elsewhere.

The offices of the subcontractor (SDC) staff are located in Santa Monica. The relative nearness of the subcontractor staff allows for frequent meetings with the Project Director and Deputy Director at their offices.

The subcontractor staff is in one of two large, multi-level office buildings that house the activities of several hundred people. Due to the classified nature of some of the work conducted by SDC, a visitor must be escorted from and to the reception area. Also, an employee must show a security card clearance when he passes through the reception area even though the receptionist may know him by sight and name.

Each staff member had his own office with the furniture usually consisting of a desk, two or three chairs, one or two filing cabinets (with combination locks), one to three bookshelves, and a work table. The equipment observed in the offices included typewriters, calculators, dictaphones, telephones, and microfiche readers. Stacks of papers seemed to occupy much space in each of the offices, but the work space seemed adequate.

The noise level in the offices was judged by the interview team as very high due to the heavily traveled streets adjacent to the office buildings. However, the interviewees did not seem to notice or appear bothered by the noise level.

Management and Communication Process

The management philosophy of the Project Director is one of delegating responsibility and authority, while acting as a catalytic agent. Critical decisions are made when necessary and others are encouraged to accept responsibilities and make minor decisions.

Some of the specific functions the Project Director engages in include tracking the production of the subcontractor by conferring with the Deputy Director to see whether a document is or is not completed, conferring with an expert to determine the content quality of a document, seeing that information is transferred from a source to a user and insuring that action through the Deputy Director, and building or maintaining project interface with agencies and people relevant to the project.

The Deputy Director supports the Project Director by continually monitoring the production rate in the subcontractor's offices, providing follow-through on decisions and requests of the Director, setting up meetings, and monitoring the budget.

There is a strong interagency reliance or dependence between the prime and subcontractor. The prime contractor has a major problem--to design and implement a system to handle the District's instructional materials operation; the subcontractor has the technical knowledge and skill to assist in solving the problem--to design and develop a system to handle the District's instructional materials operation. The subcontractor, in turn, depends very heavily on information (in terms of their design and implementation plans for the system) from the prime contractor for successful solution of the problem.

Upon completion of each piece or component of materials of the system by the subcontractor, it is delivered and explained in detail to specified prime contract personnel to insure complete understanding of the material. This is done so that the prime contractor will be able:

1. To determine if the details seem to be realistic and workable in terms of the District's needs.
2. To provide the subcontractor with necessary feedback in terms of the feasibility of the system component.

The LAUSD is the agency who will ultimately use the Instructional-Materials-Handling System in support of solution of the problem, and the subcontractor wants to make sure LAUSD understands and approves of the system in terms of its operability for their use.

The style of project management, as operationalized by the Project Manager, was to run the project in a flexible manner. Planning and assigning tasks was usually done in conjunction with the project staff. Once the tasks were identified and described, the project staff tended to volunteer themselves to carry out a task or set of tasks based on the knowledge of their own capabilities. Roughly 90% of the task responsibilities are delegated in this manner. The tasks that are not delegated on a volunteer basis are usually reevaluated and reworked by the Project Manager for going through the same process again, or, perhaps, parcelled out by the Project Manager on a trial basis.

Planning and decision-making relative to the production of project outcomes (products) is done in a combination of democratic and consensus processes. The project staff is assembled to discuss the issues; every one is free to contribute and to make suggestions. A consensus is usually reached. However, the Project Manager has primary responsibility for the project and has final authority over any decision.

The Project Manager and staff are very committed to the project. The entire staff operates on an interdependent basis and relies heavily on interaction (oral and written) with one another. The Project Manager monitors progress of the project very closely and is very concerned--as are the rest of the project staff--with quality and excellence of project outcomes. There is much interaction, review, and critique of all products that are generated and the Project Manager reviews all materials that are produced in relation to the project. It is the philosophy of the project staff to go beyond just pleasing the customer or user agency. They want to provide the customer with the best possible product within the resource limitations.

Also, the Project Manager personally delivers major products and documents to the prime contractor to explain the contents, to clarify any possible misunderstandings, and to assist in giving them a set of guidelines by which they can critically review the document and provide the subcontractor with valuable feedback--the feedback which facilitates the development of a quality and useful product for the customer.

Issues

Reorganization to decentralize within LAUSD has been a problem in the work of this project. This was especially so in the early phase of the project when the subcontractor was in the field attempting to evaluate LAUSD's materials handling practice in order to provide a suitable data base from which to design an appropriate system.

Another problem for the project has been its timing. Apparently decisions on funding were not made until just before closing of school in the early summer of 1970. Consequently interviewing of school personnel was done at a very inconvenient time for them. In addition, the necessity to get the interviews done in the short time that school would still be in session forced the subcontractor to conduct its interviewing before interview guides and questionnaires were fully developed. When the questionnaires were sent out many people did not respond because an interviewer had already talked with them, and they assumed it was not necessary to fill out the questionnaires. However, most of the school people eventually did fill out a questionnaire or supply the information in some form.

The late decision on funding also placed rather severe time constraints on the production of products in this project. The proposed duration for the work was 12 months, starting March 15, 1970 and ending March 17, 1971. However, work did not actually start until June 1 due to the late decisions on funding, but the ending date was not slipped back to compensate for the late start.

In staffing, both the prime contractor and the subcontractor have had problems. In the school district all current personnel are so tied down there is difficulty in having someone released for a temporary position in a project. Hiring a new person for a temporary position is not possible either. Early in the project, the subcontractor lost a key staff member. Because most of the staff had commitments to other projects, they were not always immediately available.

Chapter VII: Implications for Training

The purpose of this chapter is to summarize the information gleaned from this project relative to the training needs for professionals in educational R, D, D, or E.

Often staff members of a project are assigned to that project only a portion of their total work time. Such is the case in this, the AIMS Project. The average percentage of work time assignment over the eight staff members interviewed was 40%. The range was from 10% to 100%. Only one member was assigned 10% and just two were full time (100%). All staff with commitments less than full time concurrently carried other duties or assignments to other projects. If this is the reality of educational R, D, D, & E, then this should be reflected in the training.

Among the subcontractor's staff the concept of teamwork was heavily emphasized. This approach seems to reflect the business approach to educational development. The relevance of this idea to social innovation seems very appropriate. The concept of working staff, each with a well-defined area of expertise, contributing a whole part to the final goal seems much more appropriate than where a single individual is asked to contribute a portion to each of the parts in the final goal. The implication here for training, at least in the academic setting, is that possibly the preparation of a dissertation should be a group effort. Each student would contribute a part to the dissertation. He would develop considerable expertise and skill in using the skill of others--teamwork. The results could be professionals well prepared to enter into broad, long range social innovation programs.

Writing is a skill essential to the work in this project. As one interviewee stated, "We are dependent in most of our work upon writing, because this is the product we deliver to a customer. If one cannot write, technical skills really are not that valuable."

In response to questionnaire items concerning the preservice training most relevant to their present work, the staff who were interviewed listed the following:

1. Library science course work.
2. Writing (English courses).
3. Experience in systems analysis and design.
4. Experience in computer-based systems.
5. Experience in technical writing.
6. Experience in technological research.
7. Data processing.
8. Library administration courses.

Many of the staff indicated that actual work experience (on-the-job training) seemed more valuable to them than their formal academic training.

Concerning inservice training to prepare them specifically for work on this project, the staff listed the following:

1. Briefing on computer architecture for the '70's.
2. Training in making technical speeches.
3. Project briefings.
4. Project management and control.

Special note was made to training in making technical speeches by one interviewee. Much of the dissemination activity in this project is carried out verbally, necessitating skill in effectively presenting project information.

When asked via a questionnaire to suggest some areas relative to their work within this project where formal training could be specialized, the staff listed the following:

1. Project management.
2. System design.
3. Library work.
4. Computing science.
5. Mathematics.
6. Industrial engineering.
7. Contract procurement procedure.
8. Accounting and budgeting.
9. Management techniques to include organizational patterns.

In addition to the questionnaire, each staff member interviewed was asked for his training suggestions relevant to his job on the project. The following is a listing of those suggestions:

1. Attending conferences or conventions to develop acquaintance with people working in the area of study interested in.

2. Management techniques such as development and use of flow-charts, PERT charts, management principles, and development of skill in planning ahead.

3. Computer programming.

4. Sensitivity training for managers where they get a chance to experience people's reactions to themselves and their ideas.

5. Personnel work--management skills related to people.

6. Interview technique--how to carry out an employment interview.

7. Problems of budgeting a project--how to plan and put together a realistic and accurate budget.

8. Technical writing--how to prepare flow-charts.

9. Technical editing--how to judge what level or what language is suitable for the reader.

10. Project simulation exercises to help prepare the trainee for such things as identifying potential bottleneck areas in conducting a project.

11. To maintain a "state of the art" awareness of the advances in technology--important in system design.

12. Apprenticeship- or internship-like arrangement with people and organizations involved in educational development to provide student with actual work experience. One interviewee suggested that this arrangement be in industry rather than education.

13. Training for students in working under the constraints of time and money. Teaching researchers to budget their time and spend it as if someone were paying for it.

14. Informal information gathering--how to conduct an informal but focused interview.

15. Dissertations or theses could be written by committees of students. For example, the student would concentrate in one or more areas of research, developing a high skill level in those areas. For skills or knowledge of other areas he does not have, the student would rely on other students or experts in those areas. A student's progress could be judged by how many satisfactory hours he had spent in various portions, such as project manager, production worker, etc. in one or more projects. He would also be judged on his contribution to the dissertation or thesis produced.

A GUIDE TO THE OREGON STUDIES IN EDUCATIONAL RDD&E

Volume I

SUMMARY REPORT

An introduction to and overview of the Oregon Studies as a whole. The volume contains an outline of the history of the Studies, the rationale around which they were designed, the context within which they were carried out, and the procedures followed in their execution. It also contains a description of the projects selected for study, the rationale underlying their selection, the criteria and procedures used in their selection, and an overview of the data collected on each project. Finally, the volume contains an introduction to the "case profiles" that house the data collected on each project, the results of all cross-project analyses, and the summary recommendations that have been made relative to training and the continued study of educational RDD&E activities. A brief description of the case study methodology developed within the Studies, an overview of a process whereby investigators may query computer-stored data files and original interview statements to obtain information bearing upon specific questions relating to training, manpower, policy, and work performance, and supporting data accompany the volume.

Volume II

THE LITERATURE OF EDUCATIONAL RDD&E

A compendium of existing literature that defines, describes, differentiates, or relates the activities labeled educational research, development, diffusion, evaluation, and various combinations thereof. The articles within the volume are introduced as a collection. Linking passages provide an interpretive context both for individual articles and for the sets into which they have been grouped.

Volume III

CONCEPTUAL FRAMEWORKS FOR VIEWING EDUCATIONAL RDD&E

A collection of papers which provide the conceptual underpinnings to the Oregon Studies. It contains three papers commissioned by the Studies as a basis for conceptual development, and a paper by staff from Teaching Research that describes the conceptual frame that guided and grew with the empirical thrust of the Studies. Each of the papers is a major document which defines, differentiates, and relates one or more facets of educational RDD&E and provides a supporting rationale for the position adopted. Each paper is accompanied by a formal critique, and the set of papers is accompanied by an introductory and summary critique.

Volume IV

PROFILES OF EXEMPLARY PROJECTS IN EDUCATIONAL RDD&E

A collection of twenty case profiles that form the data base in the Oregon Studies. Printed in three parts, the profiles describe five research projects, seven development projects, three evaluation projects, and five diffusion projects. Each profile contains descriptions of the structure and function of the project being analyzed, the specific outputs expected to emerge from it, the operations required to produce each output, and the knowledges, skills, and sensitivities judged to be essential to the performance of those operations. In addition, each profile contains sections dealing with the "dynamics" of project operations and implications that derive from the project for preservice staff training. The projects described range from small, two-man efforts within university settings to very large school district "projects" employing several dozen staff members. Eighteen of the twenty projects described were judged to be illustrative of the kinds of RDD&E activities likely to occur within the context of education in the future. The twenty projects account for analyses around 298 project outputs and interviews with 134 professional staff members.

Volume V

A METHODOLOGY FOR THE STUDY OF EDUCATIONAL RDD&E

A detailed description of the most refined form of the data collection methodology developed within the Studies, directions to guide its use, and the decision rules needed for the volume to function as a users manual. The volume includes information on procedures used in site contact, site preparation, data reduction and analysis, and profile preparation. It also includes information on the category sets used in data reduction and the computerized data files that contain or provide access to all data collected in the Studies.

Copies of any or all of these volumes
may be obtained at cost from
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